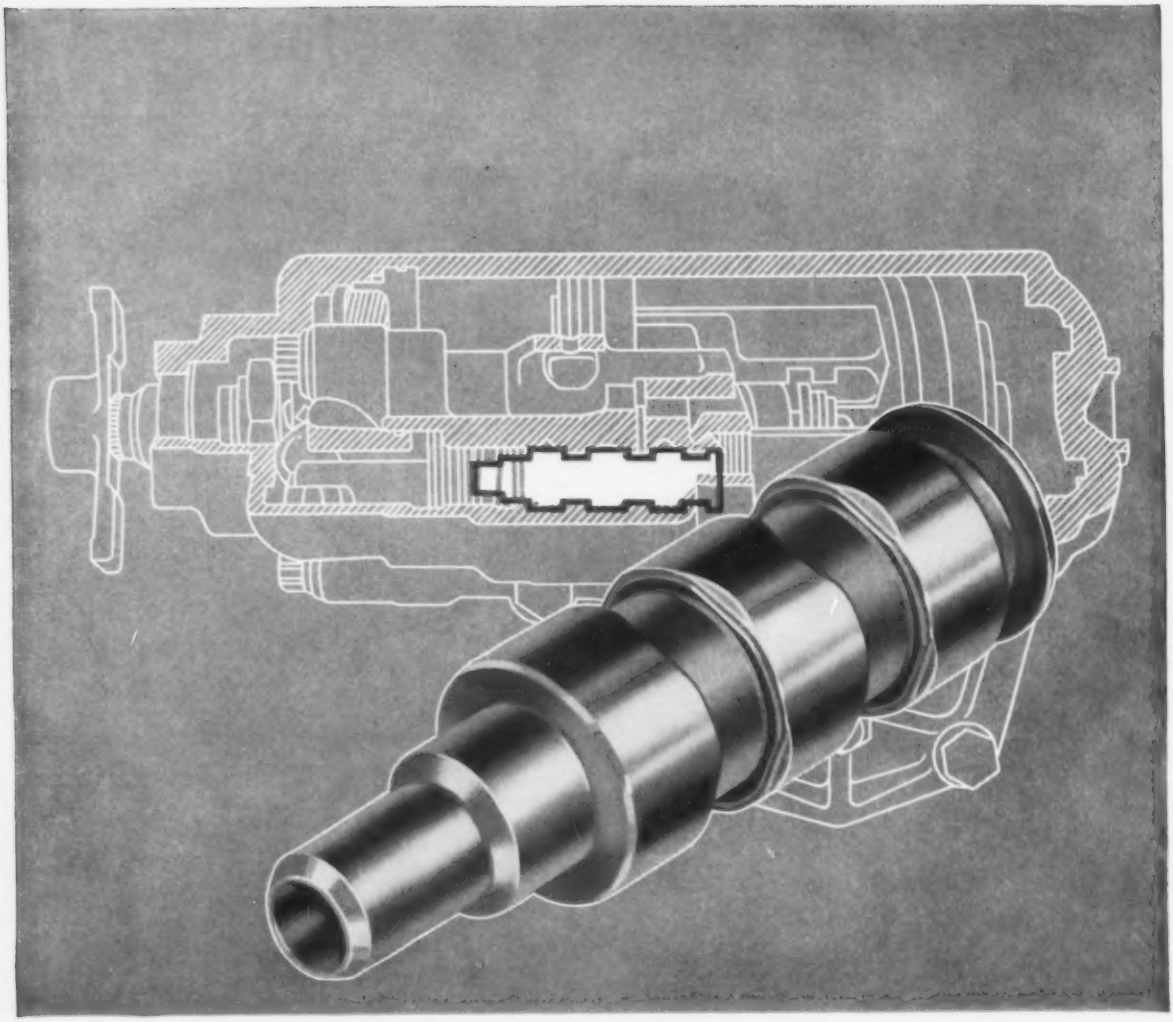
The IRON AGE
May 22, 1958 A Chilton Publication The National Metalworking Weekly

New Cycle Cuts Carburizing Time In Half P. 123



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By reducing friction between tool and chip, Ledloy "A" permitted one large automobile parts manufacturer to increase machining and spindle speeds 66%. Production correspondingly went from 144 pieces to 240 pieces per hour.

And the manufacturer goes on to say, "the quality of finished pieces went from poor to very good."

Ledloy is but one of a wide range of analyses which Copperweld can lead-treat for you. As specialists in the production of leaded carbon and alloy steels, we will be glad to send one of our field metallurgists to study your requirements. Call your nearest Copperweld district office today—start to enjoy the savings of "lead-lubricated" Aristoloy steels tomorrow.

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New Leaded Steel Catalog. Write for your copy today.

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*Inland Ledloy License

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Aristoloy Steel Division

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They've Cleared the Last Hurdle

Here are some Bethlehem drop forgings just about ready for shipment. That signed and dated tag means that they have taken the last of many hurdles. They've survived every check-up and inspection.

Matter of fact, the check-ups began even before there *were* any forgings. The steel was subjected to thorough metallurgical analysis long before it reached the forging hammers. Then, at every step along the route, the job received another careful going-over. Finally, after hardness tests, dimensional checks, and surface inspection, the finished drop forgings rated the "Passed Inspection" tag.

Every order of Bethlehem drop forgings must run this kind of obstacle race and clear every prescribed check-point. It is the customer's assurance of quality workmanship; an assurance of forgings he can accept and use with confidence.

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THE IRON AGE
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Indexed in Applied Science & Technology Index and Engineering Index.

THE IRON AGE, published every Thursday by CHILTON COMPANY, Chestnut & 56th Sts., Philadelphia 39, Pa. Entered as second class matter, Nov. 8, 1932, at the Post Office at Philadelphia under the Act of March 3, 1879. Price to the metal-working industries only or to people actively engaged therein, $5 for 1 year, $8 for 2 years in the United States, its territories and Canada. All others $15 for 1 year; other Western Hemisphere countries, $25; other Foreign Countries, $35 per year. Single Copies 50¢. Annual Review Issue $2.00. Cable: "Ironage," Philadelphia.

The IRON AGE

May 22, 1958—Vol. 181, No. 21

Digest of the Week in

★Starred items are digested at right.

NEWS ARTICLES

PURCHASING DILEMMA

To Buy or Not to Buy—There is evidence that a growing number of steel buyers are getting worried over low inventories. They'll be in bad shape if steel orders take a sudden spurt. P. 81

RAILROAD RECOVERY

Rides on Smathers Bill—Proposed legislation now in Senate

committee might start ailing railroads on the road to recovery. It would allow them to begin spending and to readjust freight rates. P. 84

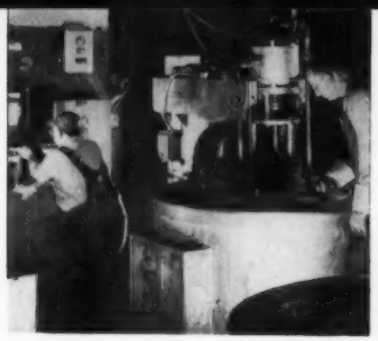
NEW SCRAP PROCESS

Scores a Hit—Auto bodies are torn to shreds in a matter of seconds at Proler Steel Corp. plant in Houston. Ferrous material is separated by a magnet. Plant has daily capacity of 1000 tons. P. 88

COST-OF-LIVING

Discounting Allowed — Government shoppers are taking discounts of appliances into consideration.

Metalworking



▼

SPEED CARBURIZING: What happens when carburizing temperatures are boosted to 1800° or 1900°F? Tests made at Chain Belt Co. heat treat department show that new carburizing cycles can actually cut furnace time in half. P. 123

But it isn't enough to offset other increases and the index is headed for new highs. P. 90

ANTI-MERGER LAWS

Pressure Eases — Congress has cooled on anti-merger sentiment. Feeling is that laws could hurt more than they help. But bills are still moving in both House and Senate. P. 103

FEATURE ARTICLES

BUILDING BLOCK DESIGN

How it Works—Alhough we're hearing more and more about the building block concept, some machine builders have been using it for some time. In fact one firm has been using standard machine bases for 10 years. Two such machines show that they're proving adaptable to different parts and design changes. P. 126

SPREAD OUT STORAGE

To Cut Supply Bottleneck—The key to success of a new storage setup is a self-propelled hydraulic crane. The mobile unit allows one company to spread its storage into unused areas around the plant and convert 2000 sq ft of inplant storage space into production. P. 130

BLANKING DIES

Which Stop to Use?—The three basic stop systems, manual, semi-automatic, and fully automatic, all fit into modern practice. The choice depends on several factors: Blanking speed, total quantity of blanks to be made, stock thickness. P. 132

MAGNETIC RUBBER ROLLS

For New Feeding-Stacking Unit —A new elastomer-base material acts like, and has many of the properties, of a magnet. It's made by compounding neoprene with various permanent magnetic materials of small particle size. P. 135

COPPER ETCH BATHS

New Regenerating Process— It's based on cupric chloride in the presence of excess chloride ions. Regeneration is continuous even while etching is in progress. Electrical costs are low. P. 138

MARKETS & PRICES

STEEL WAREHOUSES

Aim at Double Sales—Despite some red ink, the annual meeting was on an optimistic note. It featured examination of marketing techniques to double their sales with 15 years. P. 86

THE HARD SELL

More Sales Effort—AMA survey shows U. S. business expects to work harder for less profit this year. Sales and advertising effort will be stepped up. P. 89

ANNUAL RETOOLING

GM Leads the Way—General Motors is switching from three basic bodies to just one. It will enable the company to make complete body changes on its entire line in the same year, starting in '59. P. 98

NUMERICAL CONTROLS

Cost Factor—Newer numerically controlled machines are doing a bang-up job. But they aren't selling. The control units are being asked to do things they were not meant for. P. 107

STEEL SLUMP

Is the Worst Over?—The rate of incoming steel orders indicates that April saw the bottom of the market. Upturn in linepipe, plate, and structurals has been overshadowed by the automotive slump. A seasonal dip can be expected in July. P. 179

NEXT WEEK

PLANNED MAINTENANCE

An Aid to Profit—Many in industry still regard maintenance as a necessary evil. But planned maintenance, by holding costly downtime to a minimum, can actually work to boost profits. Next week's special report shows how it's done.

60 CYCLE INDUCTION MELTING

Melting metals in the 60 cycle induction furnace will bring greater economy and quality to your melting and casting operations. Whether you produce zinc or aluminum die castings, brass or bronze castings, ductile iron castings, or aluminum extrusions — to name but a few fields — there is an induction furnace to do your job.

60 cycle induction melting will reduce metal losses to a minimum and eliminate metal contamination. Alloy composition is maintained uniformly, and metal temperature is closely controlled at all times. Operating conditions are ideal: worker fatigue is reduced significantly.

AJAX ENGINEERING CORPORATION has specialized in just this one field: building the best and most efficient 60 cycle induction melting furnace for the job. As pioneers of this melting principle we have accumulated considerable experience in each field of application.

AJAX induction furnaces have been instrumental in establishing new metallurgical processes such as continuous casting, continuous galvanizing, and aluminum coating of steel. Exclusive AJAX developments are the electromagnetic pump and the AJAXOMATIC for controlled pouring.

AJAX 60 cycle induction melting furnaces range in size from 20 kw to 2000 kw, produce from 150 pounds per hour up to 40 tons per hour.

MAY WE HAVE YOUR INQUIRY?

ajax

ENGINEERING CORPORATION

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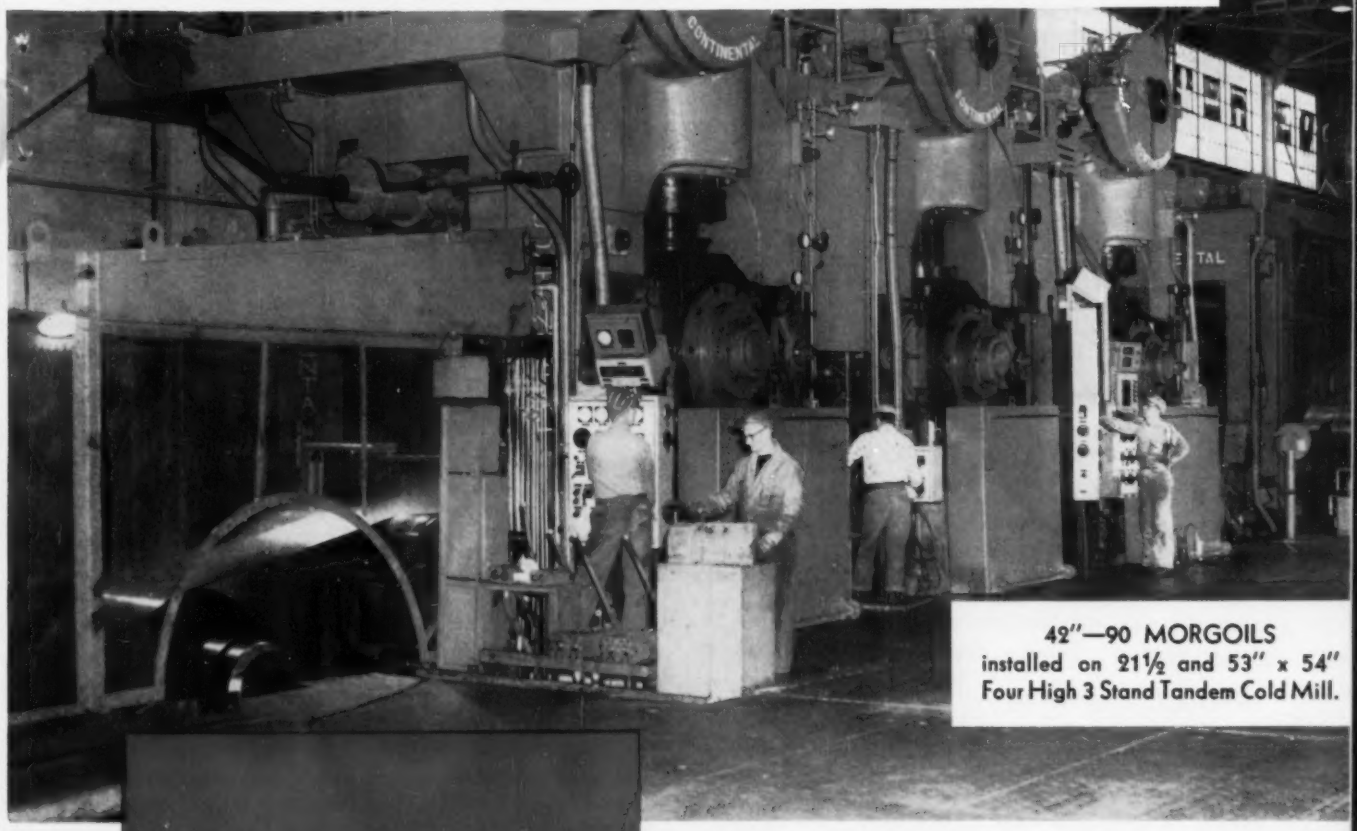
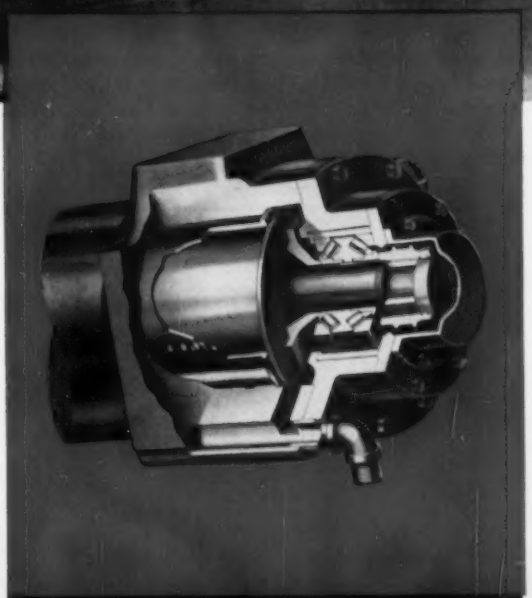
Associated Companies: Ajax Electric Company Ajax Electrothermic Corp.

MORGOIL BEARINGS *in Action*



42"—90 MORGOILS
installed on 21½ and 53" x 54"
Four High 3 Stand Tandem Cold Mill.



MORGAN
WORCESTER

MORGOILS offer you Low Maintenance—Long Life

It is a proven fact that high quality MORGOIL BEARINGS provide top performance and long life. The proof lies in the fact that the large majority of the 180 world-wide operating companies utilizing MORGOIL BEARINGS, employ them on the back-up rolls of one or more of their mill installations.

MORGAN CONSTRUCTION CO.
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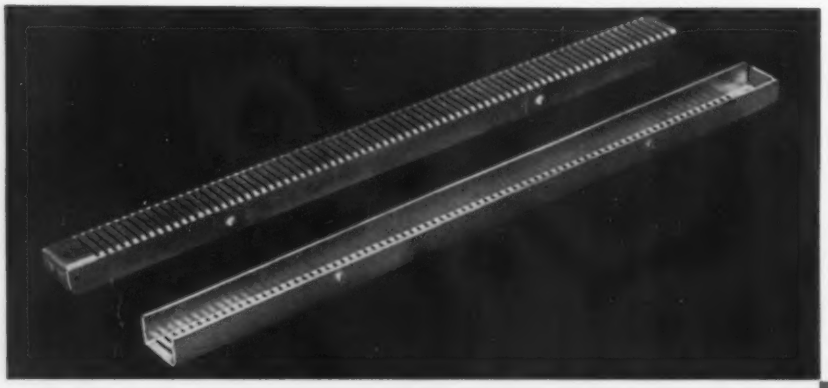
MB 33

How a redesign job with ARMCO ALUMINIZED STEEL Type 1 cut costs, added new sales points



Simple construction of this burner element, redesigned with Armco ALUMINIZED STEEL Type 1, means it can be more easily cleaned and the heater more easily serviced, both important sales advantages. Besides, Armco ALUMINIZED STEEL not only costs less than the material formerly used, but provides top-notch resistance to both heat and corrosion.

OFFERS COMBINATION OF ADVANTAGES

For many kinds of products, Armco ALUMINIZED STEEL Type 1 offers you advantages not obtainable with either steel or aluminum alone. Sheet steel hot-dip coated on both sides with aluminum, it gives you opportunities to step ahead of competition.

Resists Heat and Corrosion—ALUMINIZED STEEL Type 1 withstands temperatures to about 900 F without discoloration, up to 1250 F without destructive scaling. Its steel base provides strength and rigidity at high temperatures, its aluminum coating protects against corrosion.

Reflects Heat—Up to 900 F, Armco ALUMINIZED STEEL Type 1 reflects about 80% of incident radiant heat, directs heat where you want it for highest efficiency.

Fabricates Easily—ALUMINIZED STEEL Type 1 can be welded by standard methods. The aluminum coating adheres well in moderate drawing and forming operations. Design and fabricating problems are simplified.

Combining the advantages of two metals in one, ALUMINIZED STEEL Type 1 costs less than any other metal that can equal its performance. If your products require heat reflectivity, or resistance to heat and corrosion combined, use Armco ALUMINIZED STEEL Type 1 to cut costs and give them new selling advantages. It's available in sheets, coils, and welded tubing. For complete information, just fill out and mail the coupon.

Armco Steel Corporation
2068 Curtis Street, Middletown, Ohio

Send me information on
☐ Armco ALUMINIZED STEEL Type 1
☐ Armco ALUMINIZED STEEL Type 1 Tubing

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Name_____

Company_____

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ARMCO STEEL

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Armco Drainage & Metal Products, Inc. • The Armco International Corporation

The Nixon Incidents: Plenty of Food for Thought

It's a good thing for us that Richard Nixon was the one who coped with the South American flareups. It will be an experience he won't forget and one he will be able to use in the future.

Certainly Dick Nixon knows about the Communists. But there are many here—and elsewhere—who are still naive about them. The South American mobs were not all due to our oil restrictions or to our failure to interfere in internal affairs of nations even though some are run by dictators.

There was the unmistakable imprint of the hard core Commie in the South American trouble. Serious planning by a small group of Communists so that current touchiness could be blown up into large-scale mob psychology of hatred is an old trick. The Reds are masters at that. Their success is not due to numbers alone—techniques are important too.

Mr. Nixon's treatment will result in a "growing up" on our part. We have world responsibilities and we can't shirk them. Neither can we pull back into our tent and let the rest of the world go by.

We quite often expect gratitude from countries who get aid from us. It is time we stopped looking for "gratitude." It gets in the way of straight thinking. And besides, when we do give aid and help is it always for the recipient; or is it also for our own good and protection?

The South American trip which Dick Nixon took—and survived—is a lesson for all of us. At no time did he act scared, too angry, or pompous. Nor did he give the impression that the U.S.A. was asking favors. The same thing on a minor scale happened in other lands where Mr. Nixon has traveled. The main conclusion we may draw is that we are liked far less than we would like to believe.

But that need not worry us too much because we have a big job to do if we are to be the leader of free nations. There are more hot spots around the world than there have been for some time. And the Reds are doing their best to turn them into bonfires—for us. So we must be alert.

Here are some things we must keep in mind: We must not take too many peoples and countries for granted. We must not be misled into Communist traps which extend all over the world. And above all, we must not try to go back to the old isolation which no longer exists for us—or for anyone else.

In other words it is time for us to mature. That is the only way we will lead.

Tom Campbell

Editor-in-Chief

Just saved: 61 separate drilling operations—and not a single tolerance needs checking

Dimensions and placement of everyone of the 63 holes in this Cleaver Brooks boiler door must be right on the nose. Tolerances of the dished stamping—plus or minus 1/16" on both the 60" diameter and flatness across the flange—must be held even *after* the holes are pierced.

COMMERCIAL meets all of these exacting requirements. It designed and turned out the forming and piercing dies, forms the heavy stampings and gang pierces the holes. And it's the same story all the way with the 36" and 48" diameter dished boiler doors COMMERCIAL also manufactures for Cleaver Brooks.

Only the first gang-pierced boiler door requires a tolerance inspection. After that, as in the case of the 60" diameter stamped door, it's 63 holes at one crack—all with identical, near-perfect size and location tolerances every time. And at no time do the actual stampings go beyond the limits of their specified plus or minus 1/16" tolerances.

Here's the kind of accurate, cost-saving metal forming service you may want to consider the next time you're in the market for a medium or heavy stamping—long or short run. Just send along a blueprint or complete information on your requirements. Our engineers will cooperate fully. Address Commercial Shearing & Stamping Company, Department K-21, Youngstown 1, Ohio.

COMMERCIAL SHEARING & STAMPING

Thoughts on Safety

Sir—Your automotive column in the Apr. 24 issue on "Why Safety Is a Delicate Subject" interested me greatly.

It occurs to me that the designers working on the safety problem have overlooked one of the most obvious and inexpensive places for safety control, namely, the car roof.

This was brought home to me in a vivid and painful fashion recently. I was washing the interior of my car and bumped my head hard against the welded roof brace directly over the driver's seat. I discovered that, although there was some padding between the braces, there was no padding on any of the braces.

I am sure you will agree that these unpadded braces could be lethal in the event of a crash.

I trust that this condition will be rectified by safety engineers working on future cars.—C. B. Krill, Purchasing Agent, Bliley Electric Co., Erie, Pa.

▪ Crash research experiments have shown that it is possible for a passenger to hit his head against the roof in an accident. However, current installations of safety liners are still experimental. Evaluation work as to their effectiveness has not yet started and it's possible that installation of a safety liner would require an entirely new type of automobile roof. Under those circumstances a solution to the problem is several years away.—Ed.

Pinpointing Upturn

Sir—Will you kindly send me twelve reprints of your article "How to Spot An Upturn in Business" as printed in IRON AGE issue of Apr. 17. In my opinion this is an excellent article.—C. A. Olson, Seattle Realty Co., Seattle, Wash.

Cartoon Collection

Sir—Among the many excellent features that The IRON AGE carries every week, I am especially attracted to your cartoon feature, "The Bull of the Woods."

I and others in our shop have often wished to have a permanent collection of this cartoon. I am wondering if you can inform me whether or not "Bull of the Woods" has ever been published in book form.—S. F. Pratt, Jr., Ind. Engr., Union Steel Chest Corp., LeRoy, N. Y.

▪ Suggest you write to the NEA Service, Inc., 1200 W. 3rd St., Cleveland 13, O.—Ed.

Textbook Aid

Sir—I am revising my textbook, "Engineering Manufacturing Methods," and am writing to ask your permission to reproduce the outline drawing at the top of p. 90 in the May 1 issue. ("Computer Cuts Steps in Flame Profiling.")

My profound thanks and genuine appreciation for a favorable reply. —Prof. G. S. Schaller, Dept. of Mech. Eng., Univ. of Washington, Seattle.

▪ Permission granted. Good luck with your textbook.—Ed.

Hose at one-third the cost outlasts pipe—4 to 1

Carrying off large quantities of abrasive dust had always been an expensive problem at this Northwestern plant. For it quickly ate through heavy-gauge pipe—especially where the ducts had to make sharp turns. In fact, 8 to 10 months was the limit for any pipe they tried.

But the G.T.M.—Goodyear Technical Man—figured he could top that with HD Industrial Vacuum Hose. It not only cost much less than the special pipe, but could be installed far more quickly and easily. And when worn, it could be rotated to distribute wear. But here's the real pay-off: at last report, *the G.T.M.'s hose was still going strong after 3 years' service.*

What about production-line problems swelling *your* costs – and eating *your* profits? You can't lose by turning the G.T.M. loose on them – whenever they involve industrial rubber problems. You can reach him through your Goodyear Distributor – or by writing:

Goodyear, Industrial Products Division,
Akron 16, Ohio

HD INDUSTRIAL VACUUM HOSE by

GOODYEAR

THE GREATEST NAME IN RUBBER

IT'S SMART TO DO BUSINESS *with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and nonrubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*

Fruit of the Week

A while back we noted in this column that Alcoa owned and operated an apple orchard in Wenatchee, Washington.

Now comes word from Continental Can telling us the company owns a citrus grove on its property in Auburndale, Florida. As Continental comments: "So, too, a can company adds oranges to its list of products."

If the trend keeps up we may be well on our way to a fruit salad distributed by metalmakers and users.

The P.A.'s Off Hours

Ever wonder what the harassed purchasing agent does to relax from fending off eager salesmen?

It's no longer a secret. Allmetal Screw Products Co., Long Island, New York manufacturers of stainless steel fasteners, polled over 4000 P.A's about their hobbies.

Only fourteen pct of the specifiers didn't have one. Most averaged two. The three most popular were fishing (32 pct), golf (25 pct), and photography (13 pct).

In all 191 different hobbies were mentioned, covering a wide range of interest. Some were: Metalworking, skin diving, auto racing, meteorology, polo, wrestling, beekeeping, curling, wines, free ballooning, goat raising and daemonology.

Daemonology sent us to the dictionary. As we understand it, via Webster, a daemon is a deity or spirit "recognized as exerting power over the lives and fortunes of men." It's not to be confused with a demon, although a daemon might be a demon.

Distress Call

We noticed one business establishment not taking the recession sitting down. A local merchant is displaying a sign reading "Customers Wanted. No Experience Necessary."

Drafting Who's Who

Our thanks to Pesco Products Div. of Borg-Warner Corp. for the gallery of drafting "heroes" pictured below.

Bearing absolutely no relationship to anyone in the profession they are, from left to right:

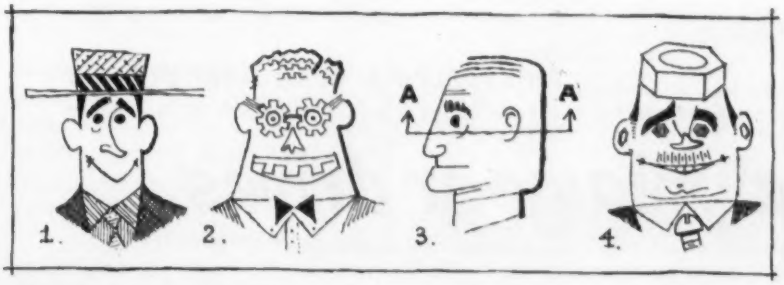
"Cross-hatch" McGurk who puts so many patterns and diagonal lines into his drawings that they cannot be read.

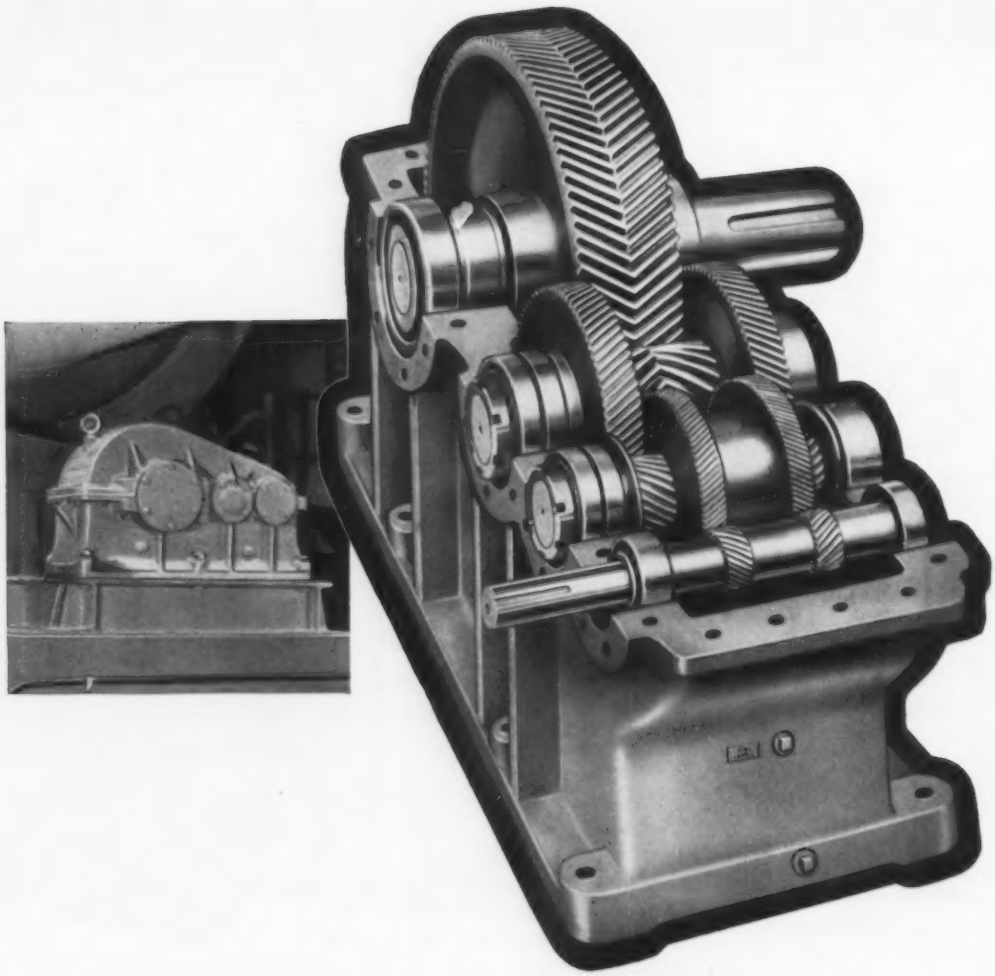
"G.T." O'Bleeth who revels in drawing gear teeth.

"Extra View" Bloo, the sectional view specialist, who never shows two views when five will do.

"Hex-Nut" DeGoltz who draws millions of wonderful screw heads and thousands of bolts in fine detail and little else that's understandable.

Not shown is Pesco's choice for drafting's real hero, "Short-Cut" McGarrity whose drawings are so clear and concise the other four guys are now working for him.





THE HEAVIER THE LOAD . . . THE MORE YOU NEED

PHILADELPHIA HERRINGBONE REDUCERS

Heavy repeated shock loads . . . high horsepower . . . round-the-clock operation . . . put them together and you have the kind of a job where Philadelphia Herringbone Reducers perform best. They will last longer and save your maintenance dollars because extra strength is built into every part . . . housings, shafting, bearings and gearing.

To be specific:

Housings are specially reinforced at points of greatest stress. Extra heavy bearings take shocks and heavy overhung loads in stride. Result: shaft alignment is accurate . . . and it stays accurate. Gears, pinions and bearings last longer.

To meet the specific needs of each application, gearing is specially designed and symmetrically arranged in the housing. Result: the bearings on each shaft carry equal loads, shaft deflections are minimized, bearings and gearing have higher shock load capacity.

Pound for pound, horsepower for horsepower and dollar for dollar, you can't buy a herringbone reducer that will outlast a Philadelphia. They are designed with *your* heavy duty drive problems in mind . . . so that you will never have a drive problem.

Philadelphia Herringbone Reducers are available in single, double and triple reduction for ratios of 1.75:1 to 292:1. Write today for your copy of Catalog H-55.

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INDUSTRIAL GEARS & SPEED REDUCERS • LIMITORQUE VALVE CONTROLS • FLUID MIXERS • FLEXIBLE COUPLINGS

COMING EXHIBITS

Packaging Show—May 26-30, Coliseum, New York. (American Management Assn., 1515 Broadway, New York 36.)

Materials Handling Show—June 9-12, Public Auditorium, Cleveland. (Clapp & Poliak, Inc., 341 Madison Ave., New York 17.)

Automation Show—June 9-13, Coliseum, New York. (Richard Rimbach Associates, 845 Ridge Ave., Pittsburgh 12.

Western Packaging & Materials Handling Show—Aug. 11-13, Civic Auditorium, San Francisco. (Clapp & Poliak, Inc., 341 Madison Ave., New York 17.)

Chemical Show—Sept. 9-12, International Amphitheater, Chicago. (National Chemical Exposition, 86 E. Randolph St., Chicago 1.)

Packaging & Materials Handling Show—Oct. 14-16, Coliseum, Chicago. (SIPMHE, 327 S. LaSalle St., Chicago 4.)

Plastics Show—Nov. 17-21, International Amphitheater, Chicago. (The Society of the Plastics Industry, Inc., 250 Park Ave., New York 17.)

MEETINGS

MAY

Air Pollution Control Assn.—Annual meeting, May 25-29, Sheraton Hotel, Philadelphia. Society headquarters, 4400 Fifth Ave., Pittsburgh 13.

JUNE

American Gear Manufacturers Assn.—Annual meeting, June 1-4, The Homestead, Hot Springs, Va. Society headquarters. One Thomas Circle, Washington, D. C.

Institute of Appliance Manufacturers—Annual convention and exhibit, June 2-4, Netherland Hilton Hotel, Cincinnati. Society headquarters, Shoreham Hotel, Washington, D. C.

(Continued on P. 16)

NEW LANDIS THREAD ROLLING HEADS

LANDIS Research has now developed the LANDIS Thread Rolling Head, exclusively featuring **replaceable helix angle bushings.** This unique basic design, through the use of relatively inexpensive bushings, allows rolling threads with exact helix angles without purchasing major head components.

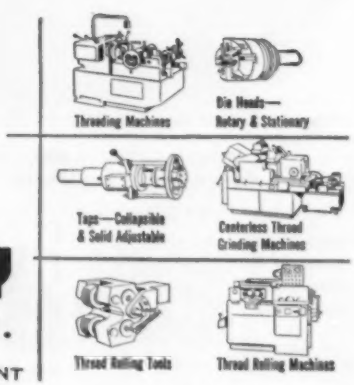
LANDIS Thread Rolling Heads will produce Class 4 threads of excellent finish at high speeds without impairing roll life. Rotary and Stationary styles are now available with a range of 5/16″ - 5/8″ UNF and UNC—with larger models also available in the near future.

For complete information on the new LANDIS Thread Rolling Heads, please write and request Bulletin F-99.

LANDIS Thread Rolling Heads can be operated at speeds used for carbide tooling, and produce strong accurate threads to Class 4 fit. Threads are of excellent microstructure and have a smooth burnished finish devoid of tool marks. After initial size has been established, these Heads can be operated indefinitely without adjustment as thread rolls never require regrinding. In addition, for maximum economy, the rolls are designed in a manner which allows them to be reversed and both ends used.

Both Stationary and Revolving styles of LANDIS Thread Rolling Heads are self-opening in operation. The Stationary Head is designed for turret lathes, hand screw machines and bar automatics employing a stationary type head; while the Revolving Head is for application to bar automatics, threading, drilling, tapping and other machines utilizing a revolving type head.

One of the outstanding features of LANDIS Thread Rolling Heads is the use of replaceable helix angle bushings. One set of standard bushings function to roll both UNF and UNC threads. The helix angle established for this standard bushing set is a "mean" angle suitable for rolling all diameters and pitches within the respective UNF and UNC ranges of the Heads. However, when the exact helix angle is required, the proper helix angle bushings can be substituted for the standard bushings. This eliminates the need to secure costly major head components.



LANDIS *Machine* COMPANY

WAYNESBORO • PENNSYLVANIA • U. S. A.

THE WORLD'S LARGEST MANUFACTURER OF THREADING EQUIPMENT

520C

EXHIBITS, MEETINGS

(Continued from P. 13)

The American Nuclear Society—Annual meeting, June 2-5, Statler Hotel, Los Angeles. Society headquarters, P. O. Box 963, Oak Ridge, Tenn.

Pressed Metal Institute—Management meeting, June 4-5, Hotel Carter, Cleveland. Society headquarters, 3673 Lee Rd., Cleveland.

The Commercial Chemical Development Assn. — Spring meeting, June 5-6, Hotel Niagara, Niagara Falls, N. Y. Society headquarters, 60 E. 42nd St., New York 17.

American Boiler Mfrs. Assn. and Affiliated Industries—Annual meeting, June 8-11, Skytop Lodge, Skytop, Pa. Society headquarters, 4062 Mayfield Rd., Cleveland.

Malleable Founders' Society—Annual meeting, June 9-10. The Homestead, Hot Springs, Va. Society headquarters, 1800 Union Commerce Bldg., Cleveland.

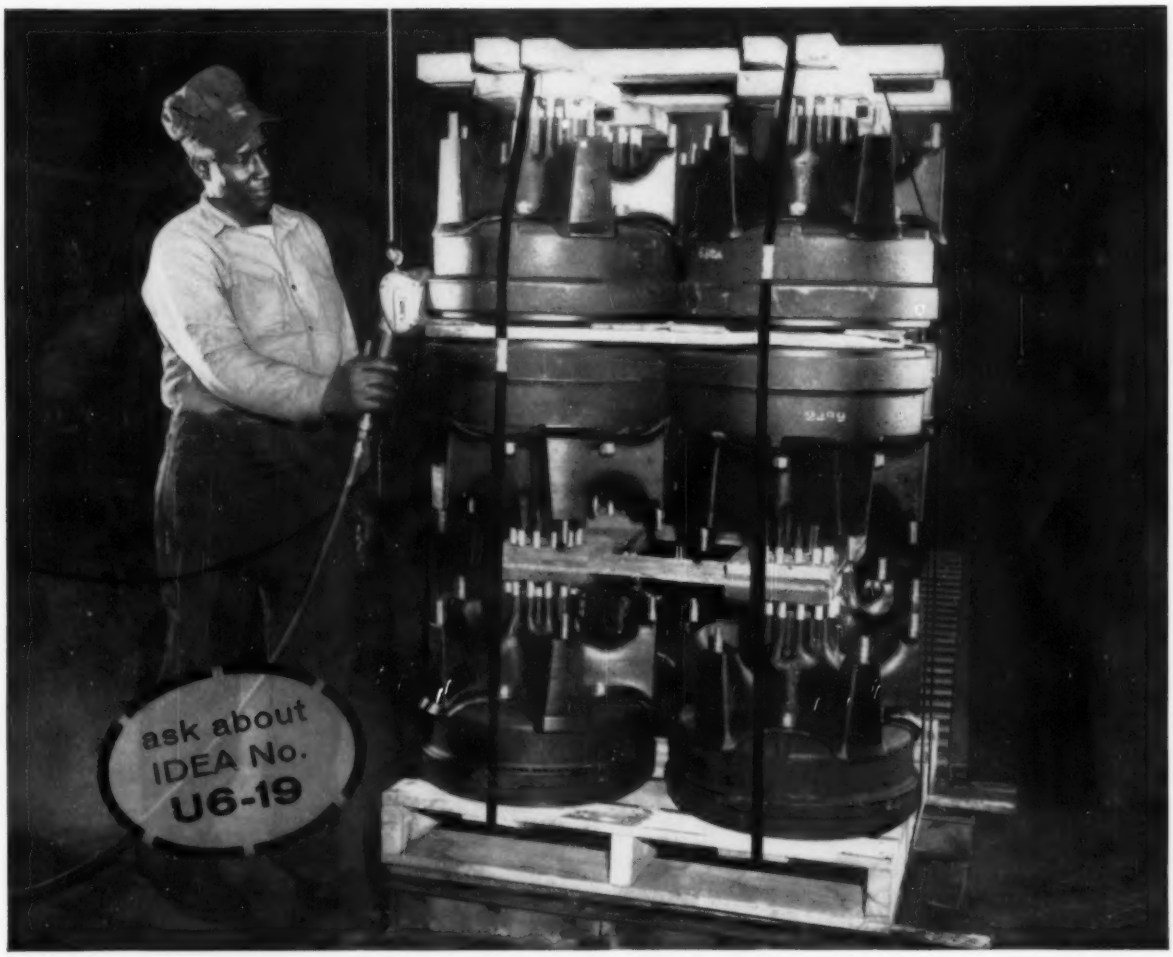
American Foundrymen's Society—Annual foundry instructors seminar, June 19-21, Castle Institute of Technology, Cleveland. Society headquarters, Golf & Wolf Rds., Des Plaines, Ill.

Alloy Casting Institute — Annual meeting, June 21-24, The Homestead, Hot Springs, Va. Society headquarters, 286 Old Country Rd., Mineola, N. Y.

American Society for Testing Materials — Annual meeting and exhibit of scientific apparatus and laboratory supplies, June 22-27, Hotel Statler, Boston. Society headquarters, 1916 Race St., Philadelphia.

Investment Casting Institute—Spring meeting, June 23-25, Occidental Hotel, Muskegon, Mich. Society headquarters, 27 E. Monroe St., Chicago 3.

Industrial Safety Equipment Assn., Inc.—Annual meeting, June 24-27, Oyster Harbors, Osterville, Mass. Society headquarters, 420 Lexington Ave., New York.



See your AIM*. . . Gunite Foundries does . . .

Acme Steel Strapping unitizes vehicle parts

GUNITE FOUNDRIES CORPORATION, ROCKFORD, ILL., found a way to improve arrival condition of precision vehicle parts. Together with their Acme Idea Man they worked out highly successful unitizing and palletizing methods, using heavy-duty Acme Steel Strapping tensioned with pneumatic tools. (Idea No. U6-19)

Acme Idea Man W. C. Saari solves strapping problems for Gunite Foundries and many other companies.

Example: Wheel and brake assemblies are unitized on pallets, and kept secure and stable in transit and during transfer between carriers, arriving at destination without damage. Both manufacturer and customer profit from maximum utilization of mechanical handling equipment. Additional time and effort are saved by Gunite through use of an Acme Steel Pneumatic Stretcher. Delivering a pre-determined tension, this tool takes strapping direct from the coil, eliminates waste and contributes to increased package output by reducing operator fatigue.

***See your Acme Idea Man** about your packaging problems. His solutions can result in safe arrival of your products, as well as savings in time and materials. Call him, at the Acme Steel office nearest you, or write Dept. IFU-58 Acme Steel Products Division, Acme Steel Company, Chicago 27, Illinois. In Canada, Acme Steel Company of Canada, Ltd., 743 Warden Ave., Toronto 13, Ontario.

ACME STEEL **STEEL STRAPPING**

Wheels and machines stay cleaner with emulsions of new S.E.C.O. Also, finishes are better.

Emulsions of new S.E.C.O. allow faster cuts with less tool wear.

Photos courtesy of
Peter Salmon Co., Glenside, Pa.

NEW EMULSIFYING OIL KEEPS MACHINES CLEAN, PROTECTS AGAINST RUST, GIVES IMPROVED HARD-WATER EMULSION STABILITY

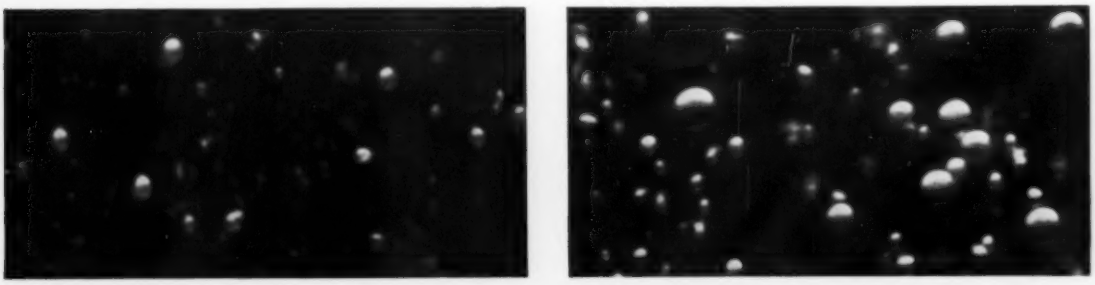
Emulsions of Sun's new S.E.C.O. (Sunoco® Emulsifying Cutting Oil) with smaller oil particle size give you the following benefits—

EMULSION STABILITY—In hard-water areas, impartial field tests show that emulsions of *new* S.E.C.O. stand up better under more severe conditions than those made with other regular emulsifying cutting oils.

DETERGENCY—The excellent wetting properties and detergency of *new* S.E.C.O. allow dirt and fines to settle quickly out of emulsions. Grinding wheels and machines stay cleaner.

RUST-PREVENTION—The smaller oil particle size in emulsions of *new* S.E.C.O. gives better metal wetting properties and increased protection against rust and corrosion. See photos below.

If you're a regular user of S.E.C.O., notice how much it has been improved. If you're not, find out what we mean about greater economy and improved production with *new* Sunoco Emulsifying Cutting Oil. Call your Sun representative, or write to Sun Oil Company, Philadelphia 3, Pa., Dept. I-9.



800x photomicrographs of 10% emulsions. *New* S.E.C.O. emulsion on left contains *8 times* as many oil particles per unit volume as ordinary emulsion on right. Many minute particles in S.E.C.O. emulsion do not show at this magnification.

SUNOCO

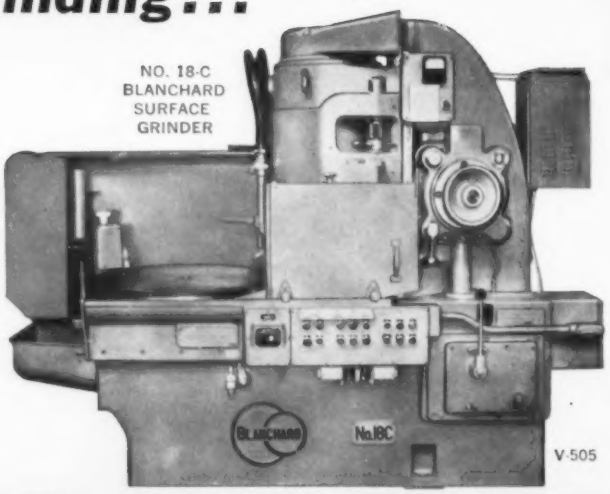
INDUSTRIAL PRODUCTS DEPARTMENT

SUN OIL COMPANY Philadelphia 3, Pa.

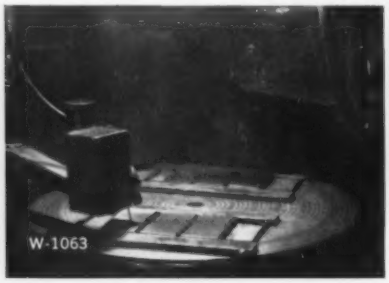
IN CANADA: SUN OIL COMPANY LIMITED, TORONTO AND MONTREAL

For better, easier grinding...

Whether you're "hogging" off stock from rough castings or precision grinding to a tolerance of ±.0005", you can do it better and easier with the Blanchard No. 18-C Surface Grinder. Once the work is set up, the automatic cycle handles every operation from start to finish. The operator is free to prepare the next load of work or to operate a second No. 18-C Grinder.



Cast Iron Plate. Blanchard ground at the rate of 30 pieces – 60 surfaces – per hour. Stock removal ⅛" each side.



Steel Bars. Blanchard ground at the rate of 48 pieces – 192 surfaces – per hour. Stock .040"-.045" from each side. Limits ±.001" square, flat and parallel.

Hot Rolled Steel Cams. One operator and one No. 18-C Blanchard produce 225 pieces – 450 surfaces – per hour. Stock removal 1/32" each side. Limits ±.001".

just push a button...

- Automatic size control to ±.0005"
- Duplication of repetitive loads
- Pre-set "spark out" time for flatness and surface finish
- No more "operator worry" on close work – greatly reduced fatigue
- A large part of operator's time available for
  (a) Handling or slushing work pieces
  (b) Filing burrs
  (c) Selecting correct wheel and preparing for next job
- Specially-designed sizing device with built-in feature to compensate – automatically – for wheel wear during grinding cycle.

All of these features give you *more efficiency at reduced costs!*

PUT IT ON THE BLANCHARD

Send for your free copy of Model 18-C folder.

THE BLANCHARD MACHINE COMPANY

64 STATE ST., CAMBRIDGE 39, MASS., U. S. A.

IMMEDIATE SERVICE

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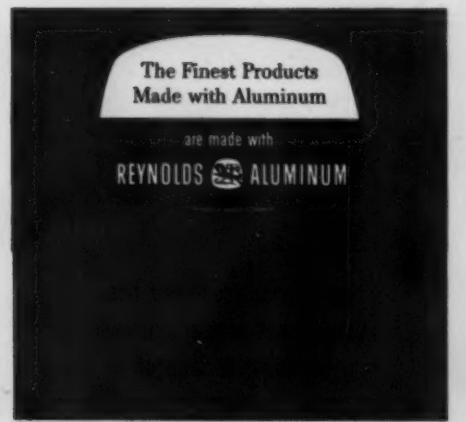
from your Reynolds Distributor

When you're buying aluminum, you often want *more* than metal. Quality is vital, of course. So is *service*—delivery, technical assistance, and often fabrication.

That's why it pays to purchase your aluminum from a Reynolds Aluminum Distributor. His stocks are your warehouse for a complete range of aluminum products. His delivery is fast and dependable. His salesmen can give you expert help in selecting the right temper, alloy and shape for your job. And often his fabricating facilities can save you important production money.

Get all the services you need when you buy aluminum. Call your Reynolds Distributor.

Reynolds Metals Company
Richmond, Virginia



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How to breathe new life into your old presses . . .

Modernize! Replace the old, outdated features on your presses with brand new factory-engineered assemblies. New clutches, new slide adjustments, new bearings—these are only three of the 42 Bliss modernization assemblies you can add right in your own plant, keeping downtime and outside costs to a minimum. You can add important new press features to your old press at a fraction of the cost of a new press!

When modernizing won't do the job . . . consider *rebuilding*. We've rebuilt presses 20 years old and older—*restored them to their original efficiency!* We replace and refit all wearing surfaces . . . replace worn and outdated parts . . . put your press back together to its original tolerances. And we *guarantee* it.

Which is better—to rebuild or modernize? It depends upon the press and what you want it to do. Your local Bliss man will be glad to give you the facts.

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BLISS is more than a name . . . it's a guarantee

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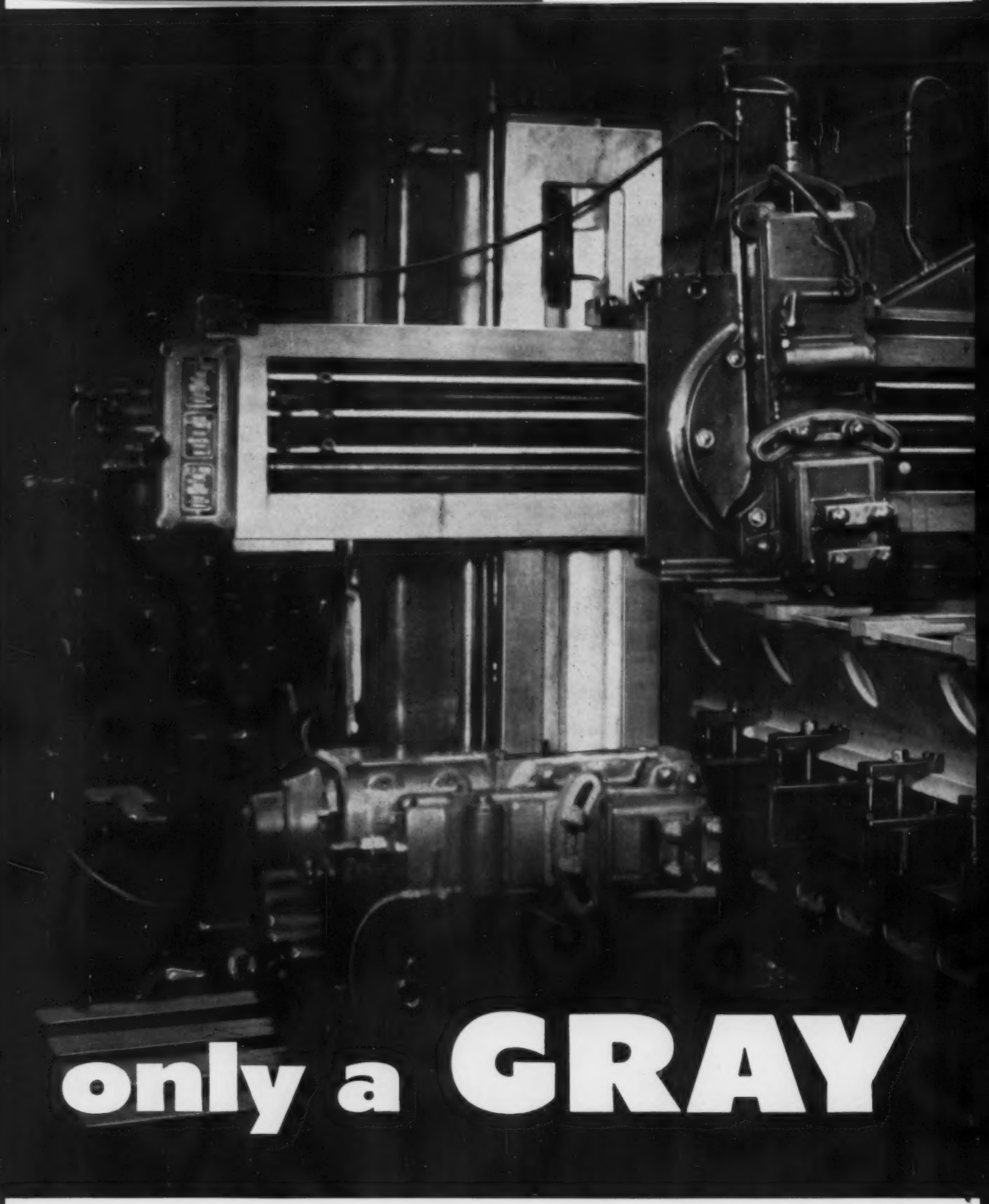


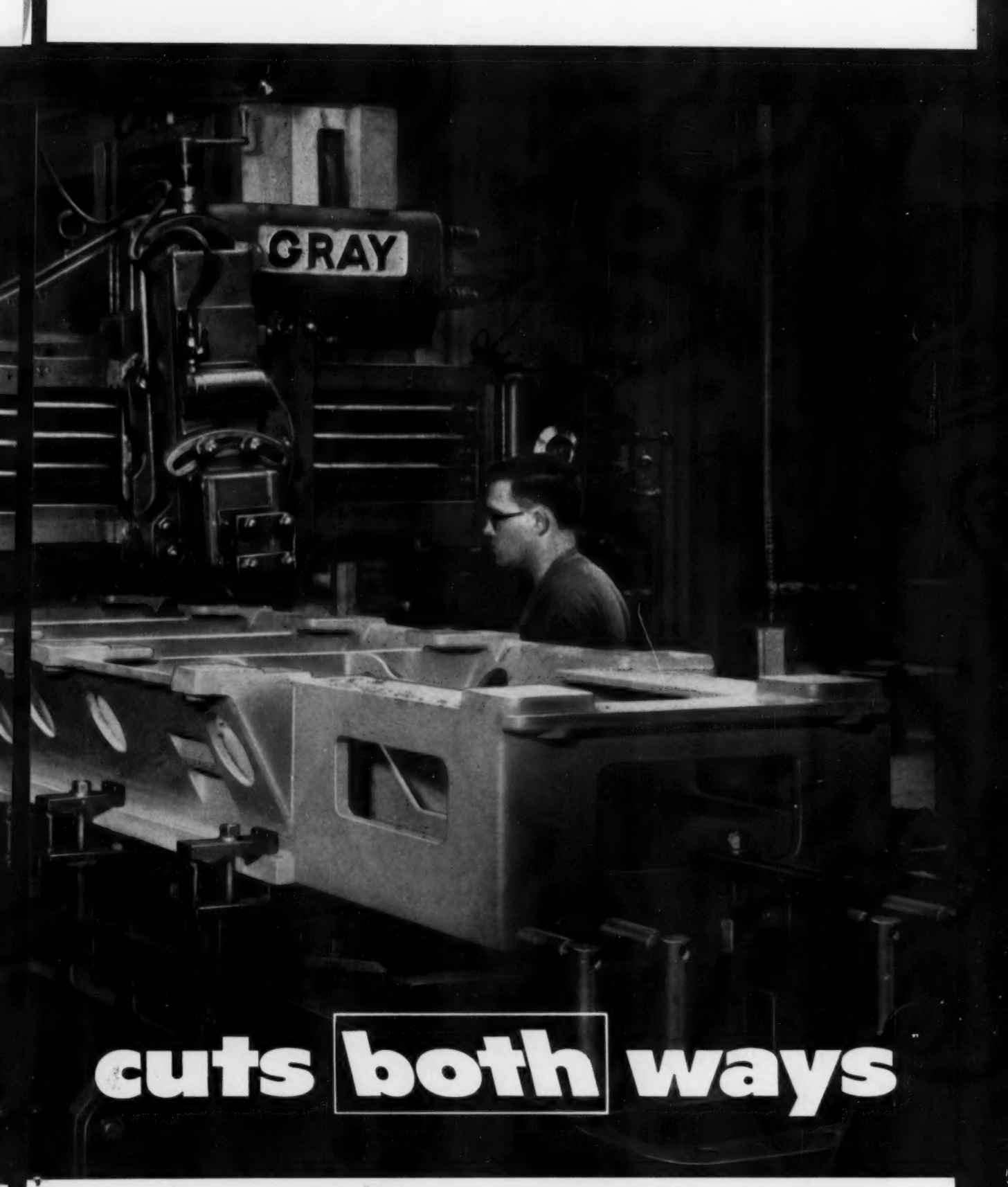
only a GRAY

Cuts going—cuts coming . . . that's "double-cutting" with the GRAY Universal Planer. At Textile Machine Works, Reading, Pennsylvania, this new GRAY is pictured double-cut carbide planing a Tricot Machine Base. Former floor to floor time of 62 hours has been slashed to 12 hours by the enormous productive potential of the new GRAY that cuts both ways.

The G. A. GRAY Co., Cincinnati, Ohio.

heavy-duty planing

The Gray Universal is the world's most powerful planer available for conventional planing. Its rigidity and speed are ideally suited for modern carbide cutting.



cuts both ways

double-cutting

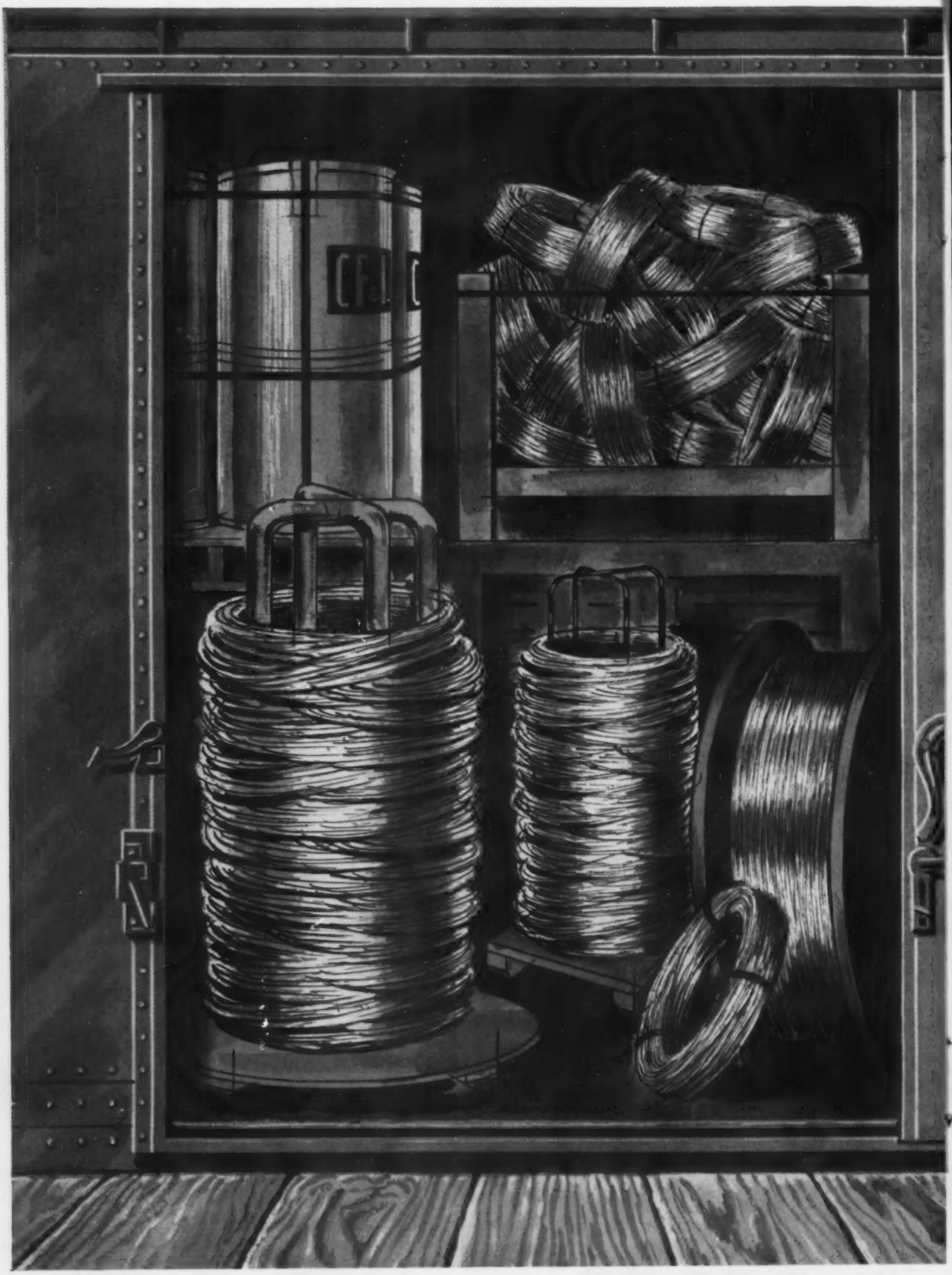
The flick of a lever, the touch of a button permits double-cutting. Elimination of the idle stroke insures the world's most efficient flat surface machining. Only simple carbide tools are required.

triple-cutting

Rough and rough-finish plane at the same time. Rough by double-cut planing and simultaneously rough-finish with a single point tool. Then finish plane without a tool change.

cross planing

Eliminates extra settings by cross planing the occasional keyways, chamfered corners, and other troublesome small cross surfaces that formerly added hours to your set-up time.



ASSORTED STEEL WIRE in ONE carload... from ONE source

From Armor Wire to Zig-Zag Wire, CF&I makes steel wire to meet thousands of specifications—packages it to meet any requirement—sells it by the coil or the carload.

You can simplify your purchasing by making CF&I your *source of supply*. Whether you need one coil of just one type of wire or a mixed carload of "assorted" wires, our newly enlarged and modernized wire mills and strategically located warehouses can get it to you—fast.

We supply high or low carbon steel wire—round, flat or shaped—in a wide variety of sizes, tempers, grades and finishes — in steel-strapped or paper-wrapped coils; on spools, reels, "spiders" (holding up to a 4000-lb. continuous length of wire) or in fibre drums. Let us know your requirements.

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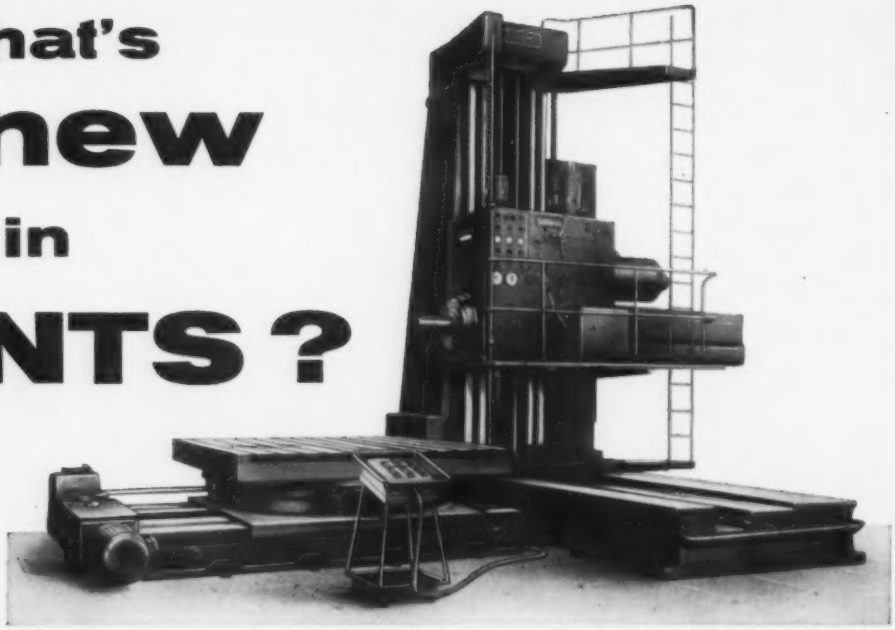
5757

what's new in GIANTS?



This 8⅜" SCHIESS model BF horizontal boring and milling machine . . . Now completely redesigned with many innovations. Here are a few . . .

Two individual drives—gear-drive for roughing, belt-drive for finishing. Belt-drive particularly suited to high-speed machining with carbide tools. New tool clamping device—does away with draw keys, hammers, drifts and binding screws. All spindle-slide movements controlled from easily accessible operating platform (or from pendant station or portable control panel, if desired). Special main-drive belt requires no readjusting. Column, spindle-slide and boring spindle may be adjusted at rapid traverse.

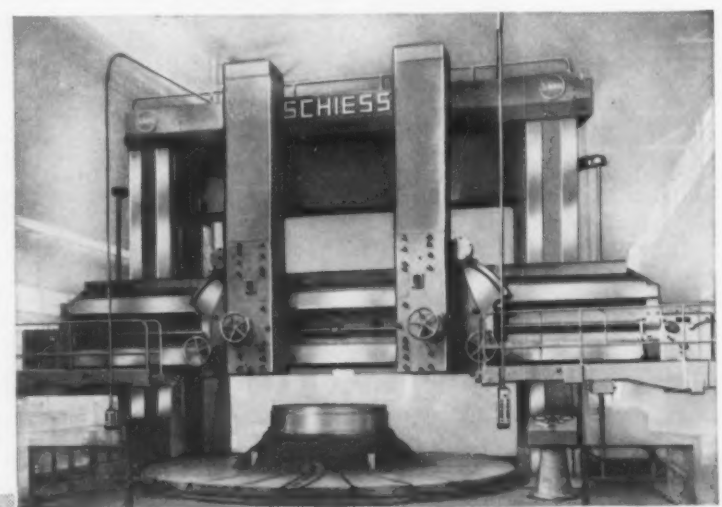
Spindle diameters, 6⅛" to 8⅜". Maximum diameter bored, 59"—faced, 79".

It takes Europe's largest builder of heavy machine tools, Schiess, to turn out giants like these. Parts and service as close as Pittsburgh. And an American Schiess engineer will be happy to help you size up these heavy producers for your heavy production needs. Write for catalogs and complete specifications on all Schiess BF and K models.

This 23 ft. SCHIESS model K vertical boring mill . . .

Look at all these new features—each one a time-saver! Rapid traverse motions with pushbutton control of changeover from feed motion to independent power traverse. Electro-mechanical locking of cross-rail to columns. Fingertip speed control—counter-balanced cross-rail and side-head—completely enclosed swiveling octagon rams—pendant control—automatic lubrication.

Turning diameters in standard sizes range from 8 ft. to 23 ft. (which can handle stock up to 100 tons!). Basic Schiess designs permit extra heavy machines, normally considered specials, to be built to your work diameter and load requirements. Even a diameter of 84 ft.!



engineering division

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AMERICAN SCHIESS CORPORATION

1232 Penn Avenue, Pittsburgh 22, Pa.

PLANING + MILLING

of Heavy Workpieces in one set-up . . . on one machine

- Reduces machining time
- Reduces set-up time
- Increases over-all accuracy
- Cuts manufacturing costs

Write for details

Waldrich Siegen combined planing and milling machines

WALDRICH SIEGEN

american waldrich mfg. corp.

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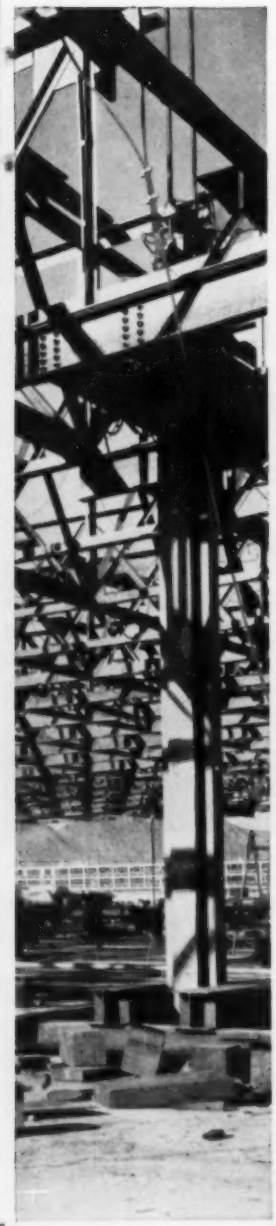
When you buy from U. S. Steel

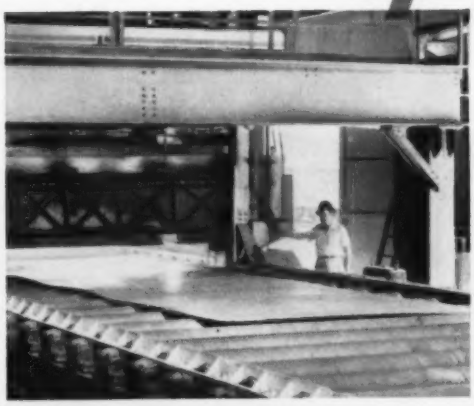
STEEL + PLUS IN ACTION: TECHNICAL ASSISTANCE

American Bridge Division of U. S. Steel fabricated and erected this steel truss roof for the Air Force Academy dining hall, *before* the walls were in. And what a roof! It's as big as two football fields and it weighs 1150 tons. Our construction crew welded the trusses together on the ground, set 16 columns in place, then jacked the roof up 24 feet to the top of the columns.

American Bridge • American Steel & Wire and Cyclone Fence • Columbia-Geneva Steel • Consolidated Western Steel • National Tube • Oil Well Supply Tennessee Coal & Iron • United States Steel Homes • United States Steel Products • United States Steel Supply and Gerrard Steel Strapping United States Steel Export Company • Universal Atlas Cement Company

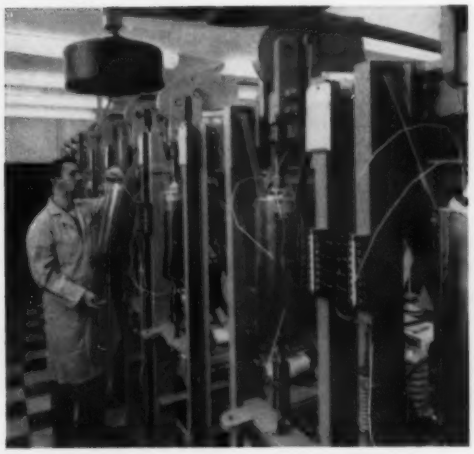
you get STEEL + PLUS





STEEL + PLUS IN ACTION: FACILITIES

To supply customers with the specialty products required for today's—and tomorrow's—critical applications, U. S. Steel equipped its Homestead Works with new facilities to heat-treat large plates of Stainless and USS "T-1"* Constructional Alloy Steel. These facilities have resulted in products having higher, more uniform mechanical properties and improved flatness, and have made them available in quantities to meet our customers' growing requirements for these special steels.



STEEL + PLUS IN ACTION: RESEARCH

U. S. Steel research teams conduct "creep" and "rupture" tests to determine how long it takes metal, at very high temperatures, to distort and break under a load. This type of information is vital, not only to develop better grades of steel, but to help designers select the best materials for equipment that has to function under extreme heat.

STEEL + PLUS IN ACTION: MARKETING ASSISTANCE

The tremendous selling power of national television promotes the products made by U. S. Steel customers. Here, during a "Steel Hour" commercial, Sheila Jackson and Jack Brand tell thousands of farm owners about the advantages of factory-built steel buildings for the farm. Result: more customers for our customers.

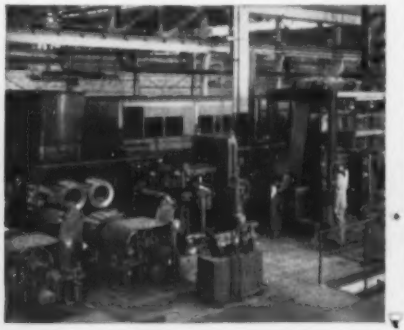
USS *TRADEMARK

United States Steel

PAIRED FOR PRODUCTION, this tandem 4-High Cold Rolling Mill processes metal bar into workable sheets—operates at higher speeds to match the requirements of other new production machinery.

ONLY ONE OF ITS KIND, this new Chase Mill has the finest electronic and automatic controls available, to assure careful control of surface, gauge and quality.

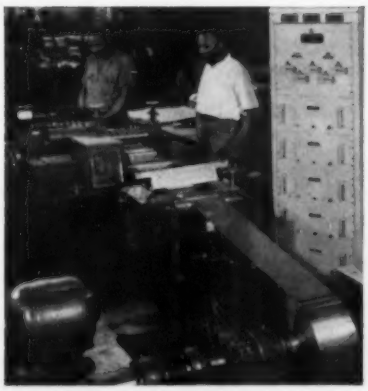
PRECISION FINISHING of sheet and strip is produced by this Sendzimir Rolling Mill —assures you of highest quality in your own finished products.



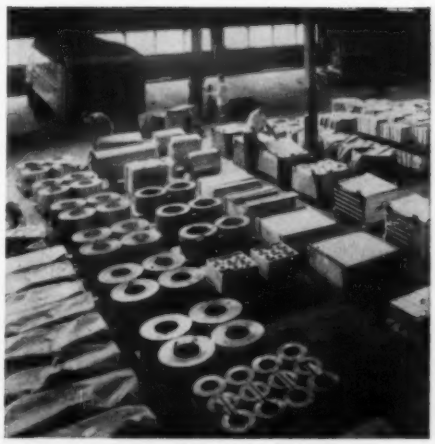
KEEPING TEMPER is the assignment of this combination strip cleaning, annealing, pickling and drying-out line in the new Chase production facilities.

The Nation's Headquarters for Brass, Copper and Stainless Steel

Atlanta Baltimore Boston Charlotte Chicago Cincinnati Cleveland Dallas Denver Detroit Grand Rapids Houston Indianapolis Kansas City, Mo. Los Angeles



NOT EVEN A PIN-HOLE gets by the electronic eye of this quality-control machine. Result—high quality to end costly rejects on your production line.



UNRIVALED SHIPPING *and Handling Facilities* assure quick handling and delivery ready for use. Note care Chase takes in packaging to protect the metal.

Now you get these 5 big advantages from ultra-modern facilities at Chase Brass!

1. You can now buy heavier coils—up to 100 lbs. per inch of width in unwelded brass and up to 180 lbs. per inch of width in copper. Longer coils match requirements of modern high-speed production equipment in your plant.

2. You can count on the best surface ever! Special mills now used are designed to produce unrivaled surface quality in both sheet and strip.

3. You can be sure of maximum gauge control. Ultra-modern electronic and automatic controls protect close-tolerance gauges from end to end of every strip.

4. You're assured better-than-ever annealing! New continuous strip annealing and bell-type annealing furnaces protect grain size and surface quality far better.

5. You can rely on delivery matched to your own production-line requirements! Automation, speeded-up operations, faster output all combine to guarantee quicker quantity deliveries.

OUT OF A PICKLE! Controlled inert gas atmosphere in new bell-type furnaces eliminates need for intermediate pickling.

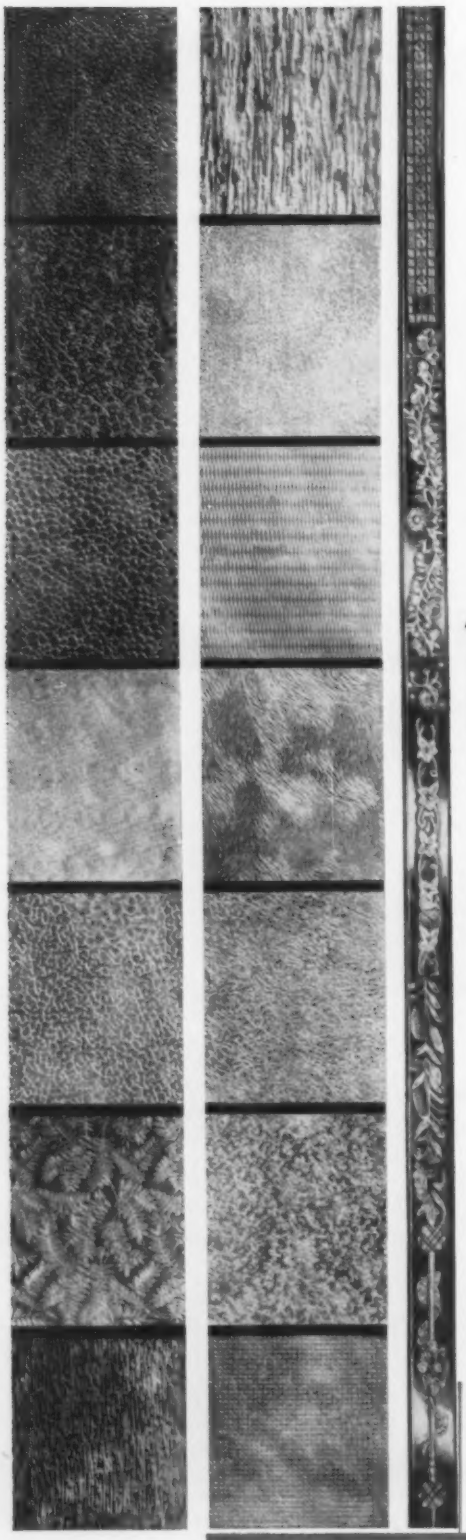
Chase

BRASS & COPPER CO.

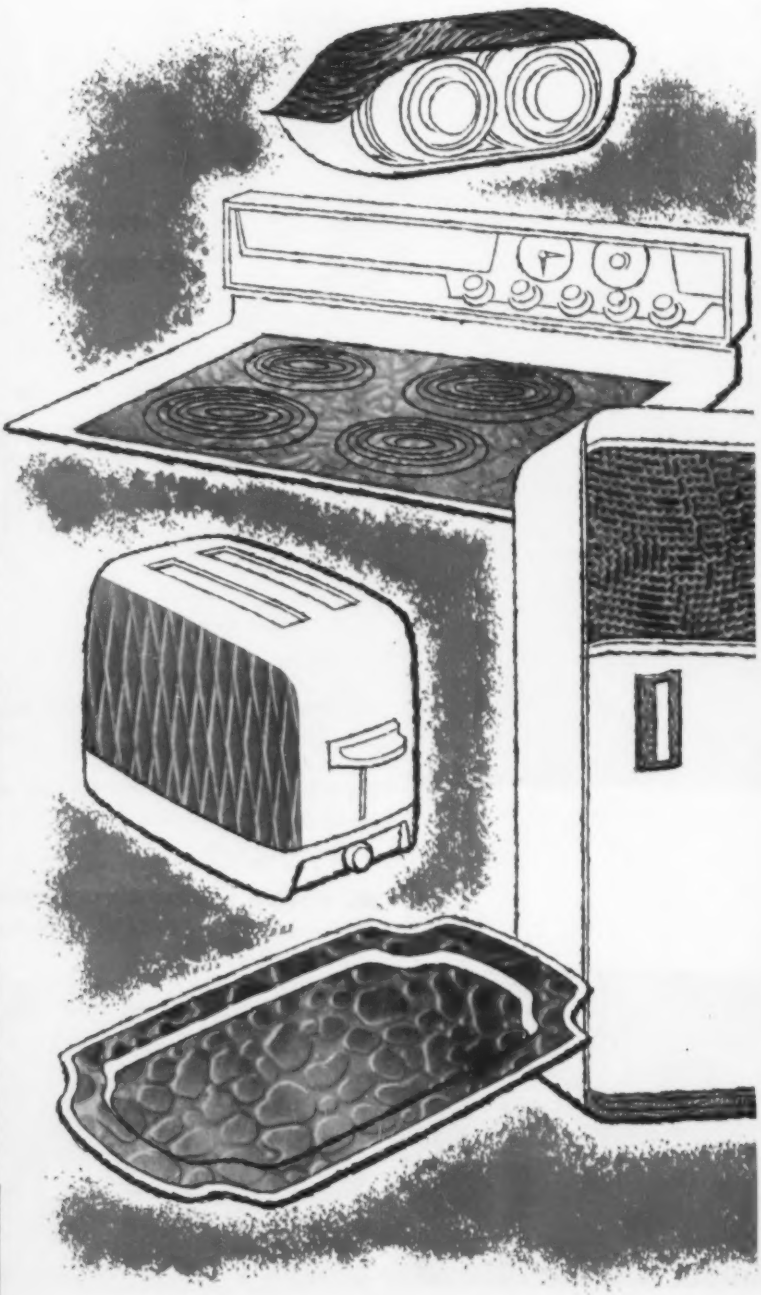
WATERBURY 20, CONNECTICUT
SUBSIDIARY OF KENNECOTT COPPER CORPORATION

MADE IN U.S.A. TO THE STANDARDS OF AMERICAN INDUSTRY

Milwaukee Minneapolis Newark New Orleans New York (Maspeth, L. I.) Philadelphia Pittsburgh Providence Rochester St. Louis San Francisco Seattle Waterbury

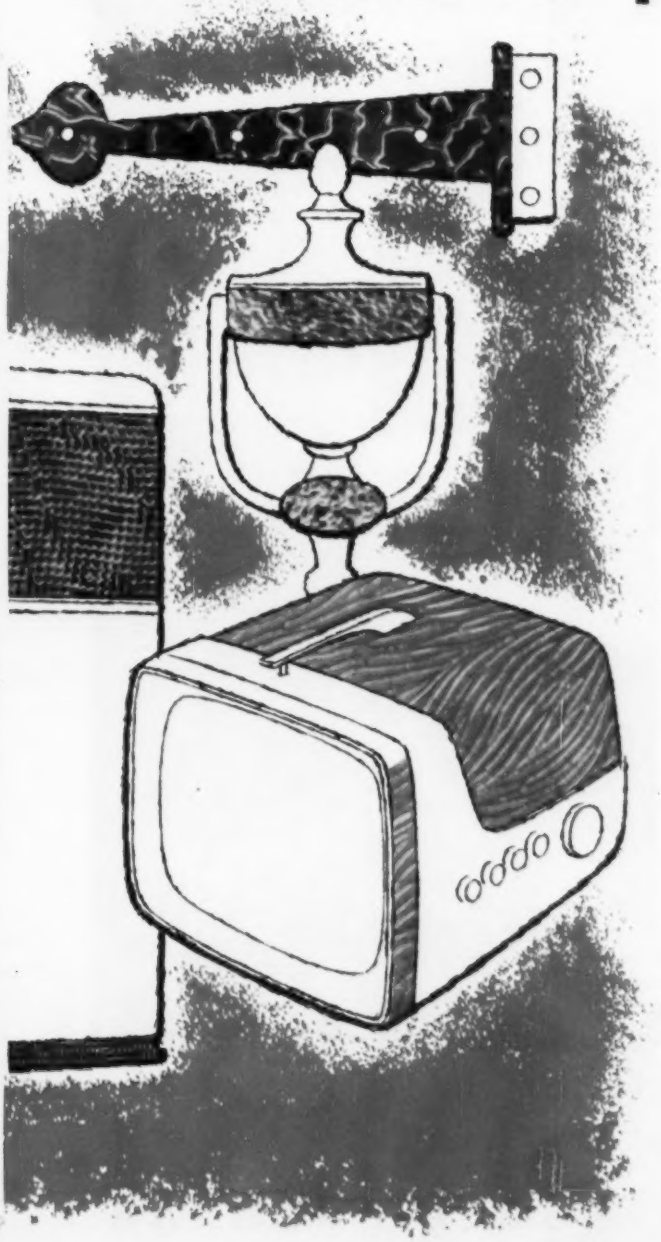


New way to



New patterns . . . Here are 19 new embossed Amerstrip patterns. They can be used on any consumer product made of strip steel, such as: escutcheons, hinges, door knockers, TV and radio cabinets, lamps, table tops, trays, dashboards and kick panels, small appliances, and large appliances.

add beauty and "sell" to consumer products



. . . embossed USS Amerstrip

HERE are just a few examples of the way in which embossed Amerstrip steel can enhance the beauty—and salability—of products made with strip steel. And this is *permanent* beauty . . . beauty you add to your consumer products at low cost.

New embossed Amerstrip is an inexpensive way to add charm and distinction to products because you do not have to apply the pattern; the designs are etched on rolls, then pressed into the strip at our strip mill. Once these patterns are applied, they cannot come off; they are permanently rolled into the steel. A wide variety of new patterns are now at your disposal. Embossed Amerstrip has been experimentally fabricated into products to prove that cold drawing does not affect the pattern. It actually draws easier because the pattern helps hold the lubricant.

Embossed Amerstrip has any number of possible applications, including automobile trim, appliances, hardware, and furniture. New embossed Amerstrip—like all types of Amerstrip—is made to meet the standards of highest quality. American Steel & Wire Division has a large, competent technical staff to help you select the embossed Amerstrip your product needs. Put extra beauty—and customer appeal—in your product with embossed Amerstrip Cold Rolled Strip Steel. For full information, call our nearest sales office. American Steel & Wire, General Offices, Cleveland, Ohio.

USS and Amerstrip are registered trademarks

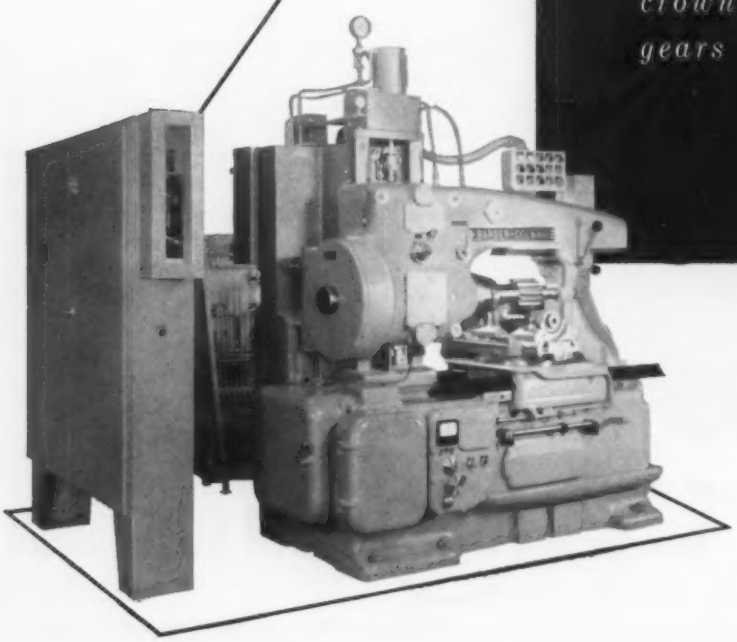
American Steel & Wire Division of USS United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors • Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors • United States Steel Export Company, Distributors Abroad

crown hobbing

with automatic cycle selection

saves time and cost in producing accurately crowned gears



Fairfield Manufacturing Company, LaFayette, Indiana, is crown-hobbing coarse pitch pinions on this special Barber-Colman No. 14-15 Hobbing Machine. Crown-hobbing is a new method for generating crowned gear teeth. Whether shaving is required after crown-hobbing depends solely upon the finish required. If the hobbed finish is satisfactory, shaving can be eliminated. If shaving is required to produce the desired finish, crown-hobbing allows uniform stock removal by the shaving cutter, resulting in reduced production time and increased shaving cutter life.

This machine, especially designed and built for crown-hobbing, may also be used for standard gear hobbing. A choice of automatic cycles is available through settings on the control panel, including hobbing at constant depth and finish crown-hobbing, rough and finish hobbing without a crown, or single cut hobbing with or without a crown, feeding either left or right with climb or conventional cutting.

On the job shown here, Fairfield Manufacturing Company is crown-hobbing 3 D.P. pinions, 14T, 20° P.A., with 5½" face and .008" change in tooth thickness. The automatic cycle includes rough hobbing at constant depth and finish crown-hobbing. In cycling, the machine completes the conventional roughing cut, work slide raises, hob returns to starting position, and work slide lowers to finished depth against the crowning cam. The gear is crown-hobbed at a constantly changing depth, as controlled by the crowning cam, work slide raises, hob returns to starting position, and cycle stops for reloading. Cycle pattern and type of feed are selected by levers on the control panel as shown.

The machine may be designed to suit special job requirements, either as a single-purpose machine, or with the universal feature, as in this case, for both crown and standard gear hobbing. A cam and change gear mechanism for crown-hobbing is provided in the design of the machine for raising and lowering the work slide during the cycle to produce a change in tooth thickness. The work slide is held against the rotary cam by hydraulic pressure in addition to its own weight. Change gears are provided in the cam drive so that different amounts of change in tooth thickness can be produced with the same cam. Different cams can be designed when a different tooth crown configuration is required.

Crown-hobbing also makes it possible to hold a change in tooth thickness within the desired limits, and the tooth bearing can be located at the most desirable point consistent with job conditions.

We welcome your inquiries on crown-hobbing and suggest you send us drawings of your crowned-gears. Our engineers will analyze the job conditions and make recommendations for crown-hobbing. If analysis shows a practical application for crown-hobbing, we shall be glad to cut samples in our laboratory for your approval.

19 tons of stainless...

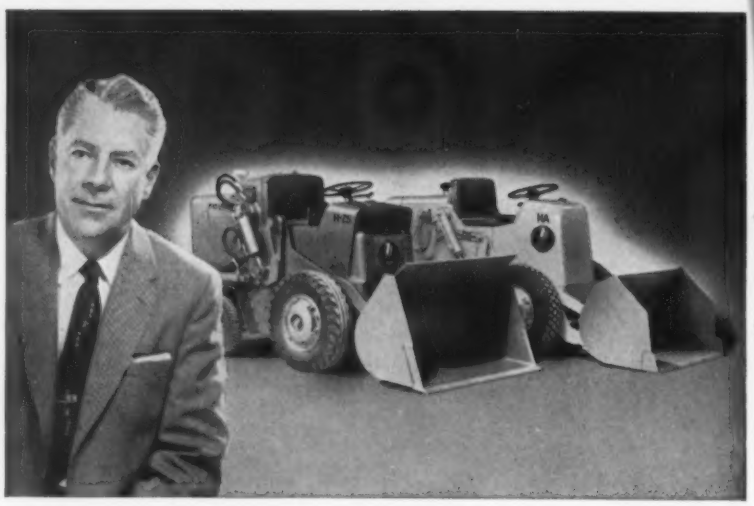
all for one customer...

all for atomic power...

Type 304 stainless plates abrasive cut to size and ultra-sonic tested. These plates total 19 tons and range from 1 to 6 inches thick.

Report on the All-New Model H-25 **PAYLOADER**®

by G. A. Gilbertson,
President of The Frank G. Hough Co.



Recently I had the pleasure of personally delivering the 10,000th production model HA "PAYLOADER" to our distributor in the metropolitan Chicago area.

Because our company pioneered the first unit-designed, rubber-tired front-end loader and because this quantity of 10,000 of a single model is more than all other manufacturers combined have produced, we were justifiably proud of our accomplishment and the acceptance of our product by industry.

Inasmuch as we anticipate a continued demand for this model HA, we plan to continue its production, even though we are now introducing a completely new machine, the model H-25.

More "Payloader" Pioneering

This new H-25 "PAYLOADER" is in a class by itself as far as capacity, productive ability and features are concerned. It is a quality machine in ***every*** sense of the word.

While it will be priced higher than the model HA, and units competitive to that model, it will be a profitable investment, since it can handle materials at a ***lower cost per yard*** and that, in the final analysis, is ***most important*** to the user.

In this connection, your Hough Distributor has available the broadest and most complete set of financing plans offered: time payment and leasing plans, with or without option to purchase . . . any and all kinds of financing to best fit your needs.

What is so different about the new H-25?

More Capacity and Maneuverability

In terms of capacity alone, it is in a class by itself . . . the only machine with a ***carry capacity*** of 2,500 lbs., at average operating speeds of 4 m.p.h.

With a bigger and heavier unit having more capacity, it would be logical to expect you would need more room to operate. On the contrary, not only can this new H-25 negotiate 6-foot box car doors with ease . . . it actually has a turning radius (measured to the outside rear hub) which is LESS than ANY other rubber-tired tractor-shovel.

How Important is Carry Capacity?

How much a loader can handle and move depends on the ***carry capacity*** . . . not on the static lifting capacity. The proper size of the bucket for any loader depends on the ***average weight*** of the material to be handled ***in relation*** to the machine's ***carry capacity.***

Thus, with the H-25 "PAYLOADER" if you want to handle the maximum load of material weighing 125 lbs. per cubic foot, you can use a bucket with an S.A.E. rated capacity of 20 cu. ft. and move loads of 2,500 lbs., which is the carry capacity of the unit.

If you consistently handle heavier materials, you should use a smaller bucket or if you handle nothing but lighter loads, you can use a bigger bucket. The ***important*** thing is to stay within the recommended carry capacity.

The H-25 Has Extra "built-in" Strength

Regardless of its size and recommended capacity, some operators will always push equipment to extremes. This abuse will inevitably result in extra maintenance and even failure. That is why we have engineered extra strength and stamina throughout the H-25 . . . for your protection.

What About Individual Features?

There are dozens of them! The new power-shift transmission and a new torque-converter are matched

to give the ultimate in speed and ease of operation. The H-25 has a two-speed, full-reversing transmission. Power-steering adds to handling ease.

This new "PAYLOADER" is equipped with sealed, self-adjusting brakes and is the only unit of this class offering this important feature.

The H-25 has a maximum dumping height that is 6½ inches higher than the average of other loaders now being offered in this general capacity range.

This new unit is powered by a 44 HP gasoline engine with overhead valves for better performance and wet sleeves for easier maintenance. LPG (liquified petroleum gas) and diesel power are available.

Dig-ability?

When it comes to digging power, the H-25 gives you 4,500 lbs. of breakout force and, like other "PAYLOADER" front-end loaders, provides a bucket tip-back of 40 degrees, ***at ground level!*** As the bucket raises, a further tip-back to 65 degrees helps retain maximum loads.

Protective Features

If you are concerned with dust and dirt like most chemical, fertilizer and foundry operators are, you will appreciate the extra protective features engineered into the H-25. For example, the engine is afforded maximum protection with triple air cleaners — a precleaner and dual oil-bath air cleaners.

This "PAYLOADER" has a filtered hydraulic system. The oil reservoir is a closed, pressure-control type, electrically welded.

The sealing of the majority of all pivot points reduces maintenance. Transmission and torque-converter oil is cooled by the engine radiator cooling system.

Other Features

This new H-25 is equipped with high-traction differential which automatically transfers more torque to the drive wheel with the best footing when slippage is encountered.

The fuel tank has sufficient capacity for eight full hours of operation, thereby eliminating the need for refueling during any shift.

The H-25 is equipped with a 12-volt electrical system. In addition to the usual standard equipment that includes fuel gage, oil-pressure gage and engine temperature gage, there is also a torque-converter temperature gage and an Hourmeter.

There are many, many more features which we think you will be interested in. The many interchangeable attachments now available for the model HA "PAYLOADER" can also be used on the new H-25. Contact your "PAYLOADER" distributor or write us direct for literature and specifications. The Frank G. Hough Co., 733 Sunnyside Ave., Libertyville, Ill.

5-A-1

Modern Materials Handling Equipment
THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

The H-25 "PAYLOADER" will be shown at both the FOUNDRY SHOW in Cleveland, May 19-23 and the NATIONAL MATERIALS HANDLING SHOW also in Cleveland, June 9-12, 1958.

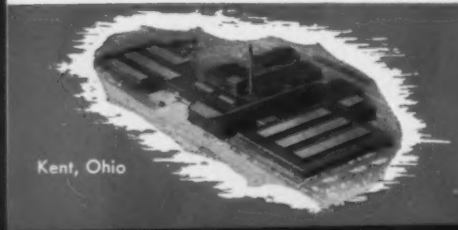
WE'RE TOSSING IN HONOR

5000 Tiedeman Road, Cleveland 9, Ohio

Entrance to Cleveland Plant

5025 West 73rd Street, Chicago 38, Illinois

Entrance to Chicago Plant



Kent, Ohio

Birmingham, Alabama

CONFETTI OF OUR CUSTOMERS

It's a Celebration!

Our two newest plants are now in operation... and our good customers made it all possible.

Sure, we're proud of these new plants ... they're huge, handsome and as new as tomorrow's headlines.

They're a symbol of continuing progress after almost a century of fastener manufacturing. These modern plants represent a new conception in up-to-date production methods and fast, efficient service to our customers.

Boiled down it means this: IF YOU WANT THE FINEST IN FASTENER PRODUCTS ... FROM THE MOST MODERN OF "AUTOMATED" PLANTS ... EQUIPPED WITH THE LATEST IN MANUFACTURING, RESEARCH AND ENGINEERING FACILITIES... CALL ON LAMSON & SESSIONS... *today.*

We'll "deliver the goods" *when* and *where* you want them!

The LAMSON & SESSIONS *Co.*

5000 TIEDEMAN ROAD, CLEVELAND 9, OHIO • PLANTS AT CLEVELAND AND KENT, OHIO • CHICAGO • BIRMINGHAM

Burroughs' Unique Tests and Johnson Wire Build Quality, Long Life in Business Machines

Detroit Plant Develops Own Devices For 100% Tests of Music Wire Springs

Burroughs Corporation demands music spring wire as thin as a spider web's strand but with a minimum tensile strength of 439,000 pounds per square inch.

Then—to make sure it gets what it orders—the Detroit business machine manufacturer does 100 percent testing of all wire coming into its plants. Burroughs goes further than standard test equipment would permit and has developed its own special testing devices.

Burroughs' insistence on enforcing specifications is the kind of quality challenge on which Johnson Steel & Wire Company thrives. A customer's emphasis on quality wire complements Johnson's own skill and care given to producing the best in specialty fine wires.

Precision springs, made from Johnson Steel & Wire Company's music spring wire, get 100 percent testing on unique testing machines like this. Designed and built by Burroughs, this machine verifies a spring's load-carrying capacity at various extensions. If any modification is needed, correction can be made while spring is still on test device.

Johnson Steel & Wire has become Burroughs' major music spring wire supplier because Johnson's wire passes 100 percent inspection with flying colors.

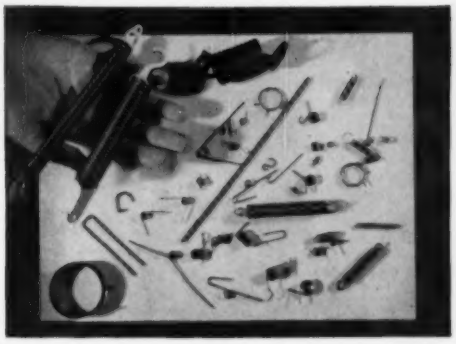
At Burroughs, where a monthly production of 3½ million precision springs of music wire is not unusual, close attention must be given to everything affecting performance of the finished spring. Failure of even the simplest spring could disable an adding machine, cash register, calculator or any of the dozens of different business machines Burroughs makes.

For its new machines, as well as service parts for older models, Burroughs makes 1,300 different kinds of springs. Music wire required for them ranges from .005-inches in diameter (with minimum tensile strength of 426,000 psi) to the largest diameter used—.106 inches in diameter, (with a minimum tensile of 268,000 psi).

Here's what Burroughs wants from music spring wire, in addition to tensile strength:

The coating, in the case of tin-coated music spring wire, must be uniform and adherent to eliminate peeling, cracking or flaking during coiling.

- **High physical qualities,** uniform cast and smooth, lustrous surfaces are another must so that uniform springs, within dimensions and capable of carrying assigned loads, can be produced.
- **Accuracy of dimensions** greatly affects spring coiling and spring performance. Burroughs' tolerance specifications are met consistently by Johnson's wire.
- **Straightness requirements** for pre-straightened wire call for a three-foot length of wire cut from a



Here's some of the approximately 1,300 different kinds of springs which Burroughs Corporation manufactures from Johnson Steel's music spring wire.

Several hundred music wire springs have been installed in this portable Burroughs adding machine. Every spring is critical, says Burroughs, because even the smallest spring failure could disable the machine.

coil to be straight within 4 inches for .013-inch diameter wire and straight within 3 inches for wire .014-inch diameter and larger.

• **Coilability** is assured in the music spring wire Burroughs buys. Burroughs specifies that wire (.105 inch in diameter and smaller) must meet this test:

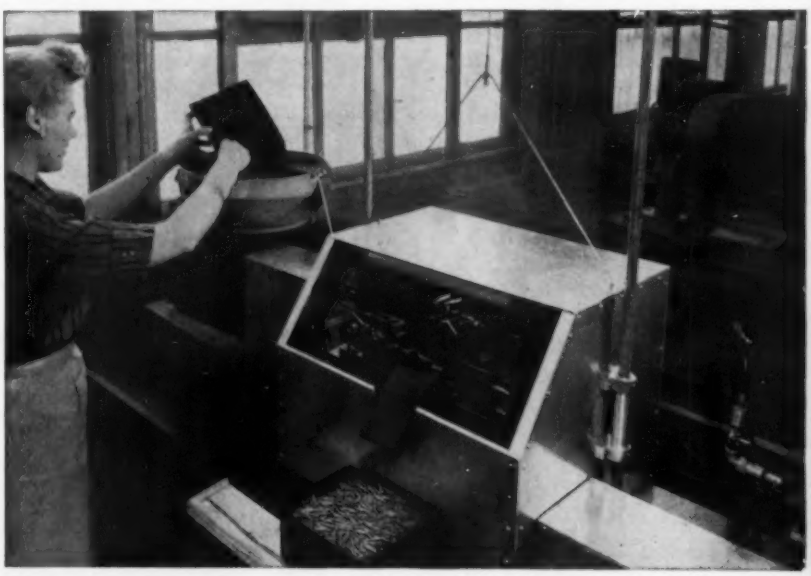
Wire is wound in a tightly closed spring to a coil length of 5 inches on an arbor 3 to 3½ times the diameter of the wire. When this spring is stretched so that it sets to 3 times its original length, the coils must show a uniform pitch with no splits or fractures in the wire.

Testing completes the cycle which calls for highly skilled technicians coiling the best music spring wire available on the most modern equipment.

Testing machines, designed and built by Burroughs and used in addition to the standard machines, include the test fixture pictured here. This machine tests load-carrying capacity of springs. If any corrections are needed, they can be made while the spring is still on the test device.

Burroughs' careful attention to specs, its quality control and its testing procedure—plus its confidence in Johnson's music spring wire—are proof that Johnson can meet the toughest music wire demands.

Putting Johnson's music spring wire on your production lines starts benefiting you immediately. A corps of skilled wire engineers is as close as your telephone. Get in touch today with any of the district sales offices listed at right.



This automatic spring eye-forming machine was designed and built by Burroughs personnel. An operator is shown filling the hopper with coiled springs which will be given an eye at each end on this device.

Johnson Steel & Wire Company, Inc.

Worcester 1, Massachusetts

a subsidiary of **Pittsburgh Steel Company**

Grant Building • Pittsburgh 30, Pa.

District Sales Offices

Atlanta	Cleveland	Dayton	Los Angeles	Pittsburgh
Chicago	Dallas	Detroit	New York	Tulsa
		Houston	Philadelphia	Warren, Ohio

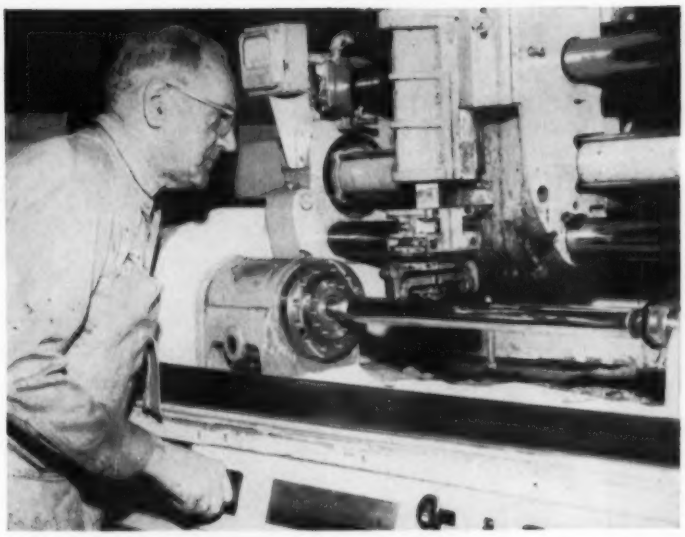
Red Foucault grinds rolls

Louis "Red" Foucault, general foreman of the roll grinding department at Allegheny Ludlum's Wallingford Steel Co., has been a leader in the development of new roll grinding techniques for 30 odd years. Recently he has been working closely with Bay State's Fred Lee and it has really paid off for all concerned.

BAY STATE
WHEELS of PROGRESS

BAY STATE ABRASIVES

Bay State Abrasive Products Co., Westboro, Massachusetts.
In Canada: Bay State Abrasive Products Co., (Canada) Ltd., Brantford, Ontario.
Branch Offices: Bristol, Conn., Chicago, Cleveland, Detroit, Pittsburgh.
Distributors: All principal cities.



This 29⅛" x 2½" roll was rough-finished with a 600 grit Bay State honing stone. Here operator Lyman Tyler is giving it the final finish with the amazing 2600 grit stone on a Gisholt Superfinisher.

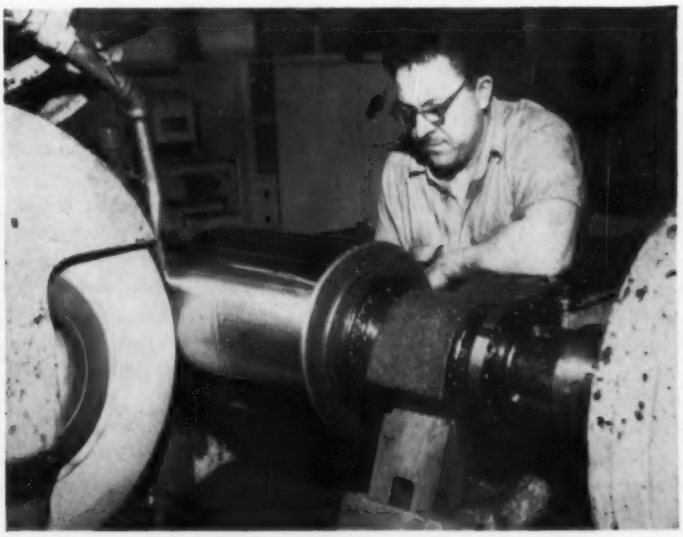
to 50 millionths tolerance at Wallingford Steel

It's one thing to talk about millionths when you're honing a piece of steel the size of your finger. But when you want to grind 33" strip-finishing rolls more than two feet in diameter to tolerances of 50 millionths concentricity... parallel end to end ...you get into a totally different kind of grinding.

And that's exactly what Red Foucault of Wallingford Steel did get into with Fred Lee, Manager of the Bay State Bristol (Conn.) office.

Two ten thousandths had been the closest tolerance possible until Lee came up with a 2600 grit stone that had never been tried on strip-finishing rolls before. *Result:* Rolls that are 400% closer to perfect concentricity with finishes of #1RMS or under . . . a new performance record for Red Foucault . . . and the smoothest stainless steel strip (finishes as fine as #4RMS) ever produced for manufacturers of cutlery, automobiles and what have you.

You'll find your own Bay State representative ready to go to infinite pains to help solve your particular grinding problems and, like Fred Lee, not afraid to try new techniques. *Better grinding at lower cost . . . that is his business.*



In preparation for final honing operation, operator John Bakamas gets a #1RMS finish (and under) on a 13" x 13" roll with a Bay State levigated aluminum oxide resinoid bonded wheel.

In Gemco Power Mowers,

REPUBLIC NYLOK FASTENERS SAFEGUARD PERFORMANCE SPECIFICATIONS

REPUBLIC NYLOK FASTENERS are used extensively on Gemco Rotary, Reel, and Riding Power Lawn Mowers. Insert shows blade assembly securely locked to engine shaft with Nylok Cap Screw. An added advantage of Republic Nylok Bolts and Cap Screws for some applications is their ability to seal against fluid escape when wrenched tight. Nylon pellet in bolt body blocks flow of fluid along helical thread path.

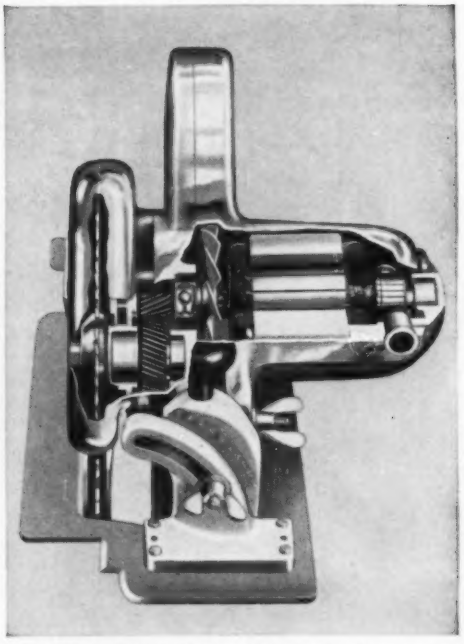
Modern Gemco Power Mowers, manufactured for General Mower Corporation, Buffalo, New York, are designed to deliver reliable, heavy-duty service with minimum of maintenance. Gemco engineers safeguard these performance specifications by using only quality materials, including Republic Nylok® Bolts and Nuts for critical assembly connections.

For example, in the Gemco Rotary Mower line, a particularly vital point is the assembly of blade to engine drive shaft. Use of a Republic Nylok Hex Head Cap Screw for this purpose assures a vibration- and shock-proof connection of maximum safety and strength. Moreover, the Nylok cap screw can be repeatedly removed and re-used to permit blade sharpening, reversal, or replacement—without loss of holding power.

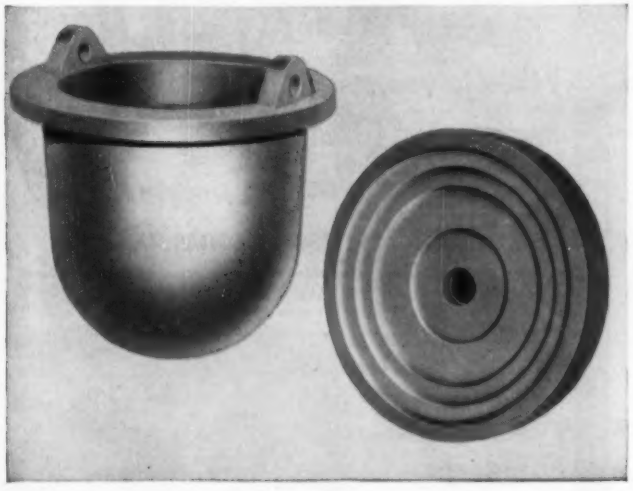
The unique characteristics of Republic Nylok Bolts and Nuts suit them perfectly to many tough fastening problems. Permanent locking is provided by a nylon pellet imbedded in the fastener body which forces a tight, metal-to-metal lock between opposite mating threads. A positive grip is maintained wherever wrenching stops. Resiliency of pellet allows both adjustment and re-use.

It will pay you to explore these and other advantages of Republic Nylok Fasteners in relation to your assembly requirements. For details, contact your nearest Republic Office, or mail coupon.

ECONOMY, CORROSION-RESISTANCE, AND PAINT-HOLDING SPECIFICATIONS make Republic Electro Paintlok® Sheets ideal for this unusual product. Produced by the Self Sett Mouse Trap Company, Cleveland, Ohio, it is a fully automatic mouse trap. Mr. E. S. Coughanor, President, found Republic Electro Paintlok best by actual test for every requirement. If you want to "build a better mouse trap" in your product field, the features of Republic Electro Paintlok may work to your advantage. For details, mail coupon.



REPUBLIC COLD FINISHED ALLOY STEELS provide required reliability in gear components of this portable electric saw produced by the Black & Decker Manufacturing Company, Towson, Maryland. The strength and toughness of these steels enables Black & Decker gears to shrug off repeated shock and heavy loading—and come back for more. Republic Cold Finished Alloy Steels may provide the perfect answer to a tough application or production problem troubling you. Send coupon for further data.



MELTING POT AND FLYWHEEL SPECIFICATIONS for these castings produced by The Union Metal Manufacturing Company, Canton, Ohio, call for a pig iron with great machinability, density, and heat resistance characteristics. Over the years, the ideal answer to these requirements has been Republic Chateaugay Pig Iron. Exclusive with Republic, Chateaugay combines high carbon with unusually low phosphorus and is copper-free. Chateaugay's uniform distribution of chemical elements produces a dense grain structure which results in economical machining, plus excellent heat- and wear-resistance. For more information, mail coupon.

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World's Widest Range of Standard Steels and Steel Products

REPUBLIC STEEL CORPORATION
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Please send more information on:

- ☐ Nylok Nuts
- ☐ Chateaugay Pig Iron
- ☐ Cold Finished Alloy Steels
- ☐ Electro Paintlok Sheets

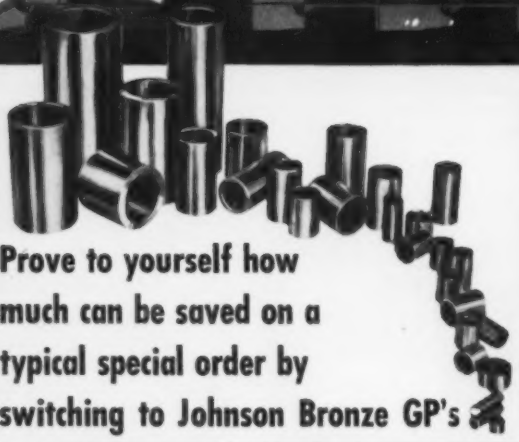
Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

Bearings off the shelf take dollars off your production costs



Prove to yourself how much can be saved on a typical special order by switching to Johnson Bronze GP's

	10 BEARINGS ½"x1"x1½"	
	SPECIAL BEARINGS	JOHNSON GP'S
PATTERN COST	$	NONE
CASTING COST	$	NONE
TOOLING COST	$	NONE
MACHINING COST	$	NONE*
SCRAP LOSS	$	NONE
TOTAL COST	$	$12.70
DELIVERY DATE	?	IMMEDIATE

Possibly slight alteration for oil grooves, holes

Johnson Bronze GP standard stock bearings can cut your production costs, whether your requirements are under a hundred . . . or in the thousands. Quality and tolerances are comparable to any special bearing, but the tooling and machining costs are eliminated.

The 900 sizes available from your Johnson Bronze distributor will fill the bill in almost every case. Check with him before you order a costly special.

Johnson Bronze

505 South Mill Street • New Castle, Pa.

Subsidiary: Apex Bronze Foundry Co., Oakland, Cal.

JOHNSON Bearings

GRAPHITED
over 175 sizes

GENERAL PURPOSE
over 900 sizes

UNIVERSAL BRONZE BARS
over 400 sizes

LEDALOYL
over 400 sizes

ELECTRIC MOTOR
over 350 sizes

People buy Scott Wipers for many reasons:

Mr. R. J. Stuart, Jr., Vice President, Messinger Bearings, Inc. says: "Scott Wipers meet our needs very well. We use them for many different wiping jobs, such as the wiping of finished bearings before inspection, wiping grease and dirt from turret lathes, keeping the hand wheel of a 144" boring mill clean plus all general clean-up wiping.

Messinger Bearings likes the safety and sanitation of Scott Wipers!

Messinger Bearings, Inc., Philadelphia makes precision bearings for the steel and machinery manufacturing industries, bearings for radar units, shipboard gun turrets, air force and army equipment. They've used Scott Wipers for the past two years. Mr. R. J. Stuart, Jr., Vice President, says: "There's a danger of metal chips in cloth wipers—chips that might cut an employee's skin, cause infection. We introduced Scott Wipers to eliminate this hazard, and to keep our men happy." Soft, absorbent two-ply paper Scott Wipers are always fresh from a box. They're disposable after use. At Messinger, Scott Wipers have helped improve morale, plant housekeeping and inspection work because the *uniformity* of Scott Wipers increases wiping efficiency.

Your Scott distributor has the complete Messinger Bearings case history and many others, covering many fields. He's in the Yellow Pages under "Paper Towels." Or write: Scott Paper Company, Dept. IA-85, Chester, Pennsylvania.

SCOTT PAPER

See "Father Knows Best" on NBC-TV.


RESERVED

Now, you can reserve steel mill output in advance of actual purchasing. You need never pay for carrying more than a minimum inventory of steel. Yet your supply is assured in peak demand periods!

try this new approach to your steel inventory problems

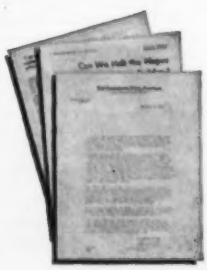
Here's Carpenter's answer to steel inventory problems you face in both high and low demand periods. Now, because you can reserve mill capacity in advance, there's no longer any need to protect your steel supply in high demand periods by placing excessively large orders.

Even though your needs may rise sharply, Carpenter's new plan assures you all the steel you need. We'll earmark extra-large stocks of semi-finished steel for your emergencies. And if you order steel out of local warehouse stocks, this same plan assures continuous, dependable deliveries.

In low demand periods, your own inventory is never more than the minimum required to match your rate of production. Cash ordinarily tied up in bigger inventories is free at a most advantageous time. And inventory upkeep costs are low.

Increased capacity at Carpenter makes this new plan possible. Through the acquisition of electric furnace steelmaking facilities in New England, Carpenter has virtually doubled previous capacity.

Today, while we're implementing this new service, is the time to go along with us. By acting now, you assure yourself of a steady supply of Carpenter top quality Tool, Stainless and Alloy steels right through the next period of peak demand. Moreover, we can offer this plan to *more* steel users than we've ever served before!



WRITE TODAY FOR "Can We Halt the Plague of Periodic Inventory Buildup?" Recently released, this special report gives you full details on how Carpenter's plan can help you keep inventory costs at a minimum!

The Carpenter Steel Company, Main Office and Mills, Reading, Pa.

Alloy Tube Division, Union, N. J.
Carpenter Steel of New England, Inc., Bridgeport, Conn.
Webb Wire Division, New Brunswick, N. J.

This man is handing you the "Touch of Gold"

This Norton grinding wheel is a money-maker for everybody. Every time it touches the work it adds value . . . provides increased production for management . . . improved earning power for operators . . . better products for the users.

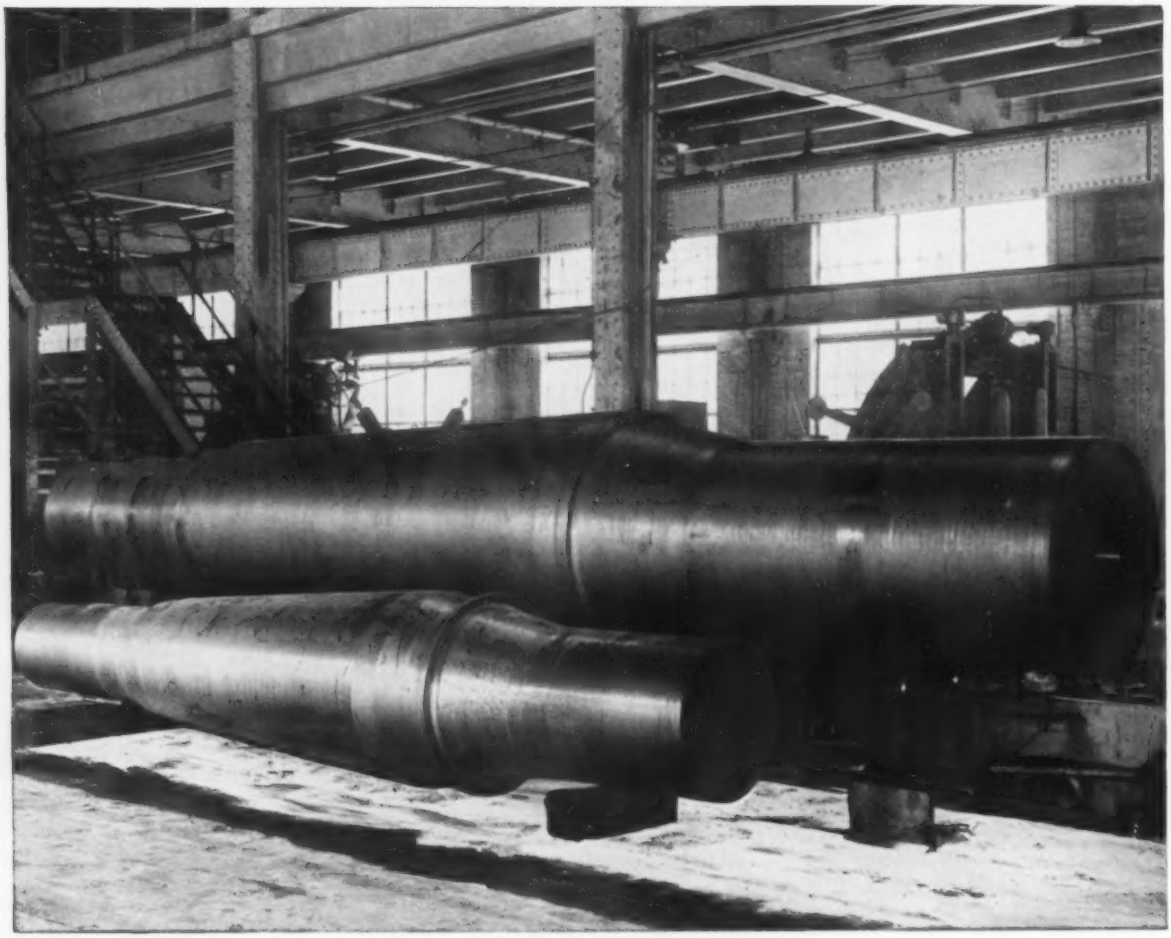
That's why men say Norton grinding wheels have the "Touch of Gold". Norton has more than 200,000 types and sizes of grinding wheels. For every grinding job there is a Norton wheel that will do it best.

Norton representatives help shopmen select that right wheel and are available wherever grinding is done.

NORTON COMPANY, Headquarters, Worcester 6, Massachusetts.

NORTON
ABRASIVES

Making better products . . . to make your products better



***Forged from 3½% Nickel Steel** — These gyratory crusher shafts weigh 102,000 and 34,000 lbs. and are 25 and 17 feet long respectively. They were produced by Bethlehem Steel Company, Steelton, Pa.

*In large forgings like this...**

You get desired properties reliably with Nickel Steel

Usually husky parts like this cannot be quenched without special facilities.

How then do you get the superior mechanical properties often required in heavy-sectioned parts?

By selecting a nickel alloy steel that doesn't need a liquid quench to develop strength and toughness.

Why Nickel?

The tests of time and laws of metallurgy have proved nickel to be most valuable in developing high mechanical properties in heavy forgings. Nickel, often acting with other alloying elements, increases the hardening response of steel parts too large to liquid quench. The resulting microstructure formed gives added strength and improved toughness.

Do you have a problem?

Nickel alloy steels are used for dependable trouble-free performance in the most demanding applications. Send us the details of your problem. We may be able to help you — write today.

INCO TRADE MARK **THE INTERNATIONAL NICKEL COMPANY, INC.** 67 Wall Street New York 5, N.Y.

YOU GET
EXTRA PROTECTION
against corrosive... abrasive or explosive elements

TYPE EP
Standard TEFC
1 to 100 hp

TYPE JP
Explosion proof
1 to 100 hp

with Wagner totally enclosed motors... protected for longer motor life

If you need motors that will keep production rates up... that will give the continuity of service that is so important to automation... that will operate with complete dependability under the most severe conditions —Wagner totally-enclosed motors are your soundest choice.

Type EP Motors offer protection against corrosion, dust, abrasives, fumes, steel chips or filings. Type JP is explosion proof as well — designed and approved for use in explosive atmospheres.

NEW NEMA FRAMES—These motors are built in the new NEMA Frame sizes from 182 through 445U, with ribs that add mechanical strength and increase the surface cooling area. Effective cooling system adds to motor life.

Let your Wagner Sales Engineer show you how these protected motors can bring you savings on initial motor costs, maintenance costs and continuity of operation.

1 TO 100 HORSEPOWER—4 POLE, 60 CYCLE—NEMA FRAMES 182 THROUGH 445U

Wagner Electric Corporation

6400 Plymouth Ave., St. Louis 14, Missouri. Branches and Distributors in All Principal Cities

HEAVY DUTY BALL BEARINGS

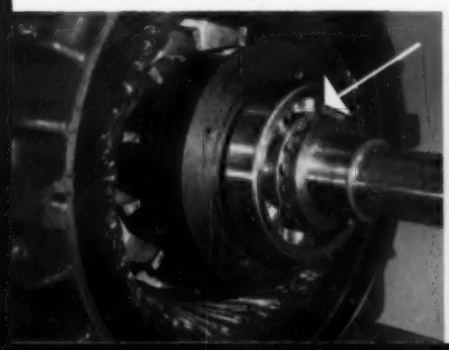
The ball bearings used in these motors are of the highest quality, with more than ample capacity to provide long troublefree service under heavy loads.

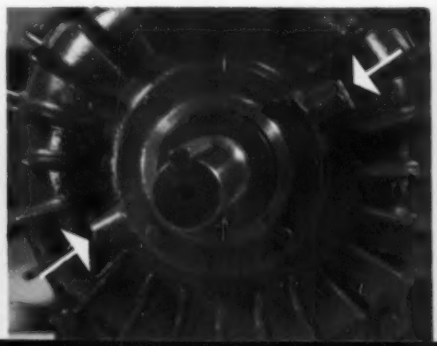
BEARINGS CAN BE RELUBRICATED

Factory lubrication will last for many years under normal service, but openings are provided to permit relubrication that adds years to motor life under severe conditions.

SEALS KEEP BEARINGS CLEAN

Both ends of these motors have running shaft seals to keep the bearings clean. Bearing housings are effectively sealed to prevent escape of grease.

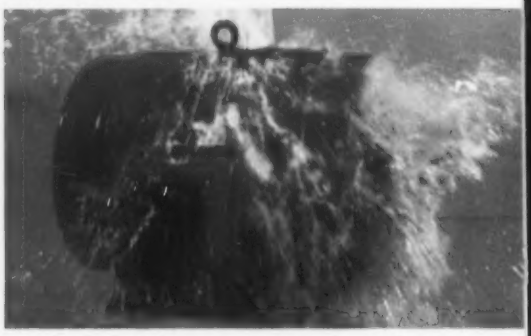




YOU GET
DOUBLE PROTECTION
against corrosion...
against falling
or splashing liquids

TYPE DP
1 to 125 hp

Air intakes and outlets are positioned to provide complete dripproof protection.



DOUBLY PROTECTED—Wagner DP Motors offer the double protection of completely dripproof enclosures and rugged cast iron frames that can take rough handling and resist corrosion.

with WAGNER TYPE DP MOTORS designed to meet more application needs

Wagner Type DP Motors offer the *double protection* of rugged corrosion-resistant cast iron frames and dripproof enclosures so well designed that the DP Motor can handle many applications that formerly required splashproof motors.

These Wagner Motors are built in the new NEMA ratings that pack more power in less space, are lighter in weight and are easier to maintain.

SLEEVE BEARING MODELS AVAILABLE

The entire line of ratings through 125 hp is available with ball bearing construction as illustrated, or with steel-backed, babbitt lined sleeve bearings that have high load carrying capacity and provide quieter operation.

Let a Wagner Sales Engineer show you how these motors can be applied to your needs. Call the nearest branch office or write for Wagner Bulletin MU-223.

1 to 125 HP—1750 RPM—40°C
NEMA FRAMES 182 through 445U

CAN BE RELUBRICATED—Factory lubrication will last for many years in normal service—but openings are provided to permit the relubrication that adds years to motor life under severe conditions.

COOL RUNNING—Specially designed baffles direct cooling air through the motor to reduce stator temperature—thus increasing motor life. Blowers, cast as part of the rotor, move large volumes of air without noise or vibration.

Wagner Electric Corporation
6400 Plymouth Ave., St. Louis 14, Missouri.

WM58-9

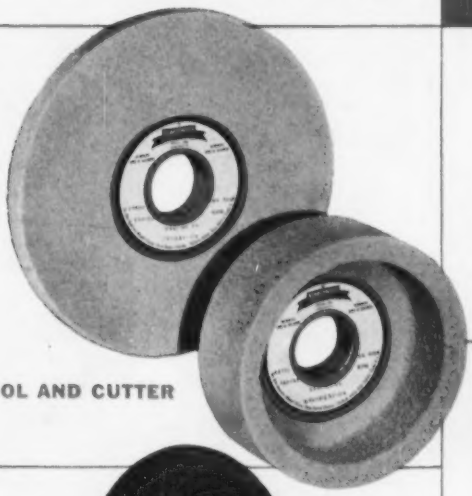
GENERAL PURPOSE

SIMONDS ABRASIVE CO.

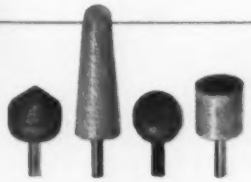
Grinding Wheels

For Savings and Efficiency on ALL your grinding jobs

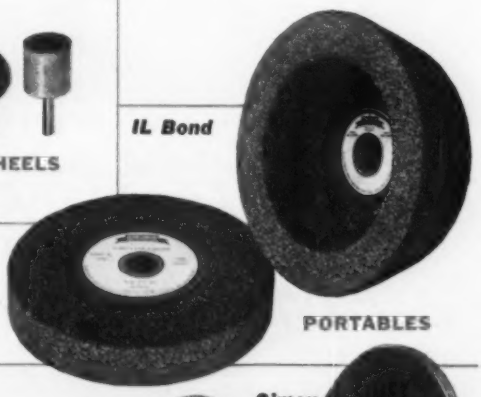
Grinding wheels for fast stock removal or micro-finishing! Toolroom wheels with new SA Borolon abrasive for improved cutting action! Portables with new IL Bond for longer wheel wear, better grinding! These, plus mounted wheels and fast long-wearing, non-burning cut-off wheels, are part of Simonds complete grinding wheel line — the line for consistently superior results with savings to match. Catalog bulletins on request.



TOOL AND CUTTER

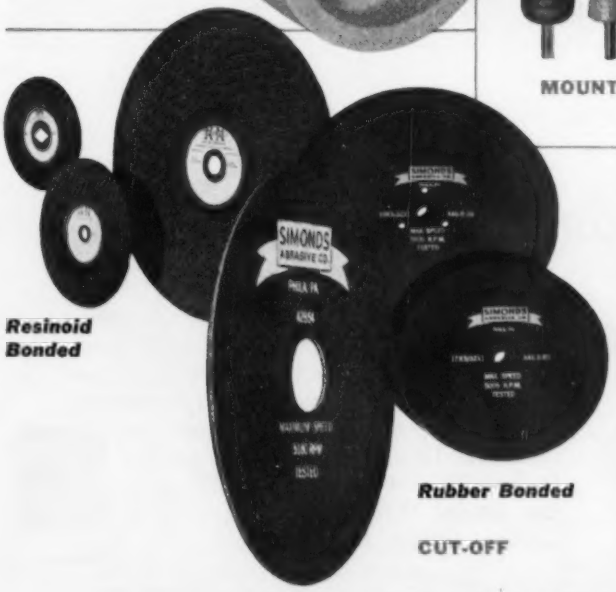


MOUNTED WHEELS



IL Bond

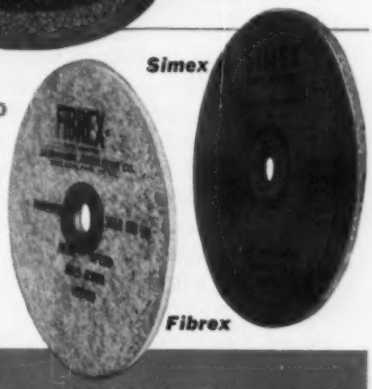
PORTABLES



Resinoid Bonded

Rubber Bonded

CUT-OFF



Simex

REINFORCED RESINOID

Fibrex

CALL YOUR SIMONDS DISTRIBUTOR

P roven products

D ependable know-how

Q uick supply

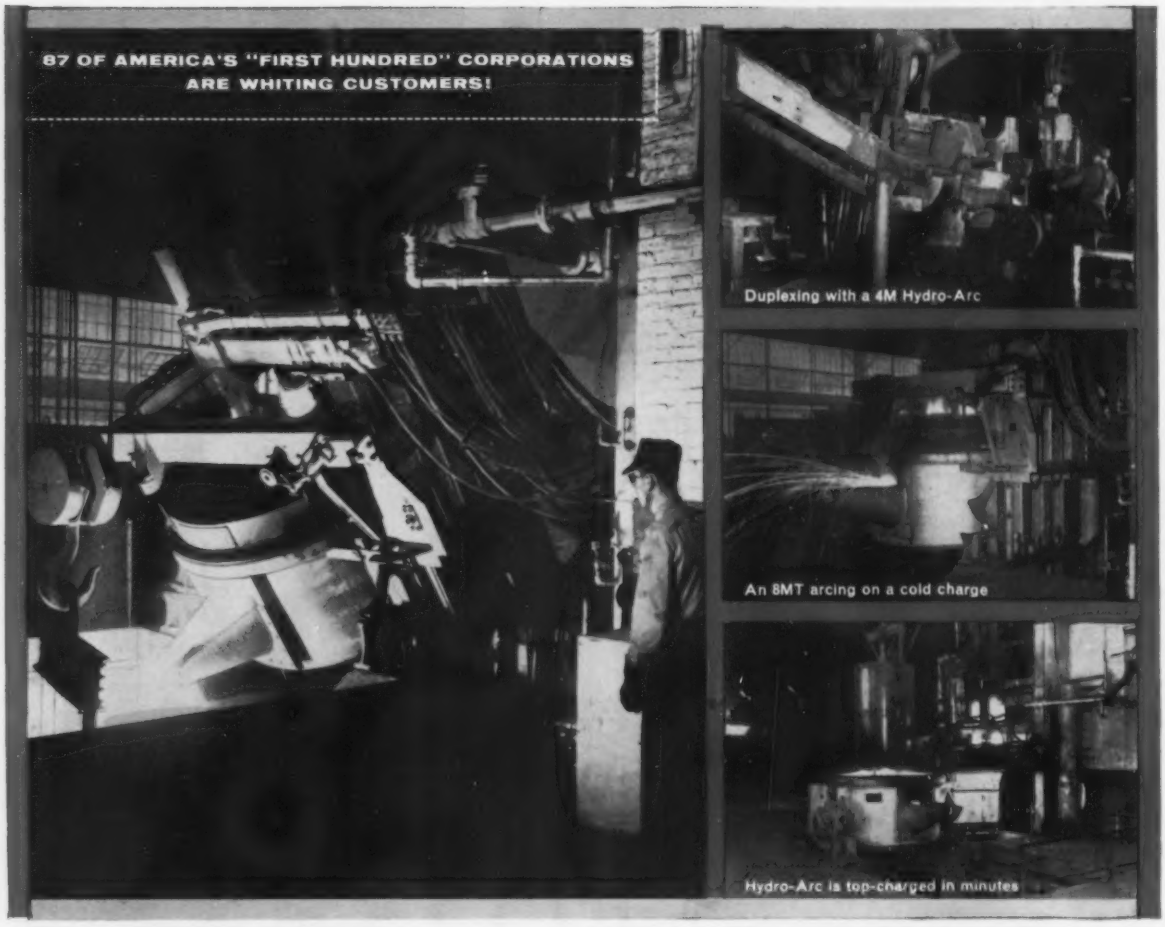
SIMONDS ABRASIVE COMPANY

Tacony & Fraley Sts., Philadelphia 37, Pa.

Division of Simonds Saw and Steel Co.

BRANCHES: Philadelphia • Chicago • Detroit • Shreveport

Los Angeles • San Francisco • Portland, Ore.



Hydro-Arc...

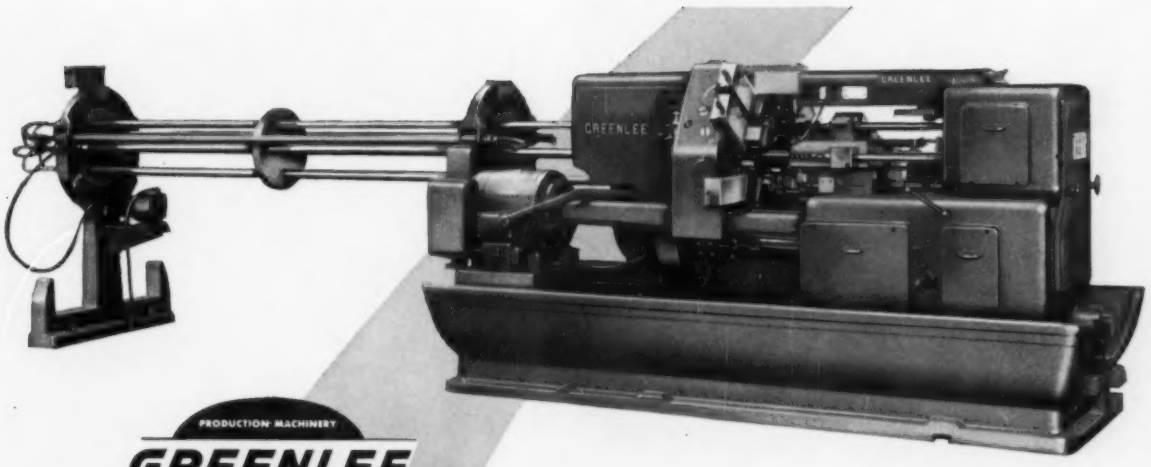
Engineered for today's melting needs

Engineered for today's high production capacity, the Hydro-Arc Electric Furnace is the answer to all your prime melting and duplexing needs. It has fewer moving parts . . . is easy to operate and maintain—economical, too! New hydraulic power transmission . . . automatic clamp and arm for fast, safe electrode slipping . . . patented repositioning equipment for a constant arc even under the most adverse conditions—they're but three of the many advancements that upgrade melting efficiency, produce a better product. In addition, Hydro-Arc's top charging reduces down-time, helps assure more-melt-per-man-hour! Investigate Hydro-Arc today. Send for Bulletin FY-168, the booklet that gives the details! *Whiting Corporation, 15601 Lathrop Avenue, Harvey, Illinois.*

WHITING

FOUNDRY EQUIPMENT

MANUFACTURERS OF CRANES, TRAMBEAM HANDLING SYSTEMS, TRACKMOBILES, FOUNDRY, RAILROAD AND CHEMICAL PROCESSING EQUIPMENT



PRODUCTION MACHINERY

GREENLEE

AIR-FEED AUTOMATIC

- 1 **Permits Greater Job Versatility**
- 2 **Easily Adapted to Multiple Feedouts**
- 3 **Provides Longer Stock Feedout**
- 4 **Eliminates Stock Scoring**
- 5 **Reduces Stock Reel Noise**
- 6 **Eliminates Stock Pushers**
- 7 **Eliminates Feedout Cams**

Write today for Catalog A-405, or better still, have the Greenlee man call and show you the way to more profitable production with this air-feed automatic bar machine.

GREENLEE STANDARD AND SPECIAL MACHINE TOOLS

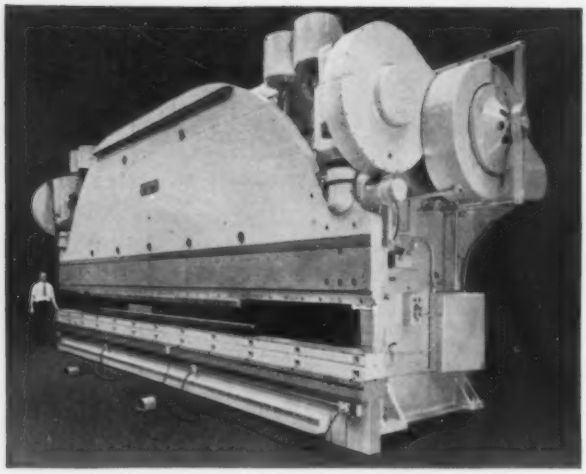
- Multiple-Spindle Drilling and Tapping Machines
- Transfer-Type Processing Machines
- Six and Four-Spindle Automatic Bar Machines
- Hydro-Borer Precision Boring Machines

GREENLEE BROS. & CO.

PRODUCTION MACHINERY

GREENLEE

1805 MASON AVE.
Rockford, Illinois



How press brake construction affects job costs

Only accurate machines can make accurate bends. The accuracy obtainable from a press brake begins with its structural rigidity. Cincinnati Press Brakes give you maximum accuracy and rigidity because of these construction features:

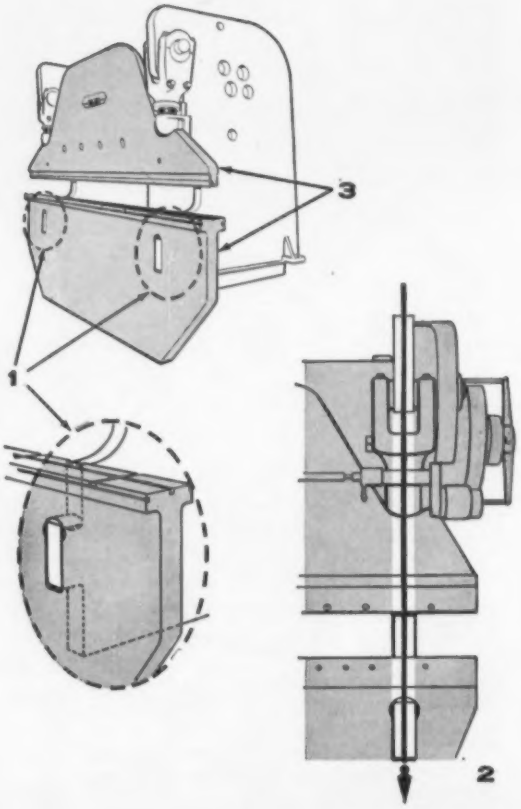
1. Interlocked construction—The bed is supported directly by the housings, by means of hand-scraped bearing shoes. No welds are used as load supports, so every Cincinnati is free from welding strains.

2. Center line loading—Since the Pitmans which drive the ram *straddle* the housings, weaving of the frame and cramping of the ram slides and shaft bearings is eliminated. All operating forces are contained within the housings.

3. Deep beds and rams—It's a simple engineering fact that the rigidity of a press brake's ram and bed increases approximately as the cube of the depth. For this reason, most of the weight of the ram and bed of a Cincinnati Press Brake is disposed in depth, rather than thickness. Tests prove their working surfaces remain parallel within .005" under capacity loads.

To you these construction features mean money saved in the long run. A Cincinnati Press Brake is more accurate than other makes when you buy it . . . and will stay that way throughout its long life.

Write department B for Catalog B-5.



Shapers / Shears / Press Brakes

THE CINCINNATI SHAPER CO.

Cincinnati 11, Ohio

QUALITY HEAT TREATMENT
THE LIFE-BLOOD OF A GOOD BEARING

MESSINGER continues its leadership in the manufacture of large bearings with a new 132-inch inside diameter Electric Salt Bath Furnace. Pictured above are two through hardening tool steel bearing races, 97.000" outside diameter, for use in azimuth bearings for large radar units.

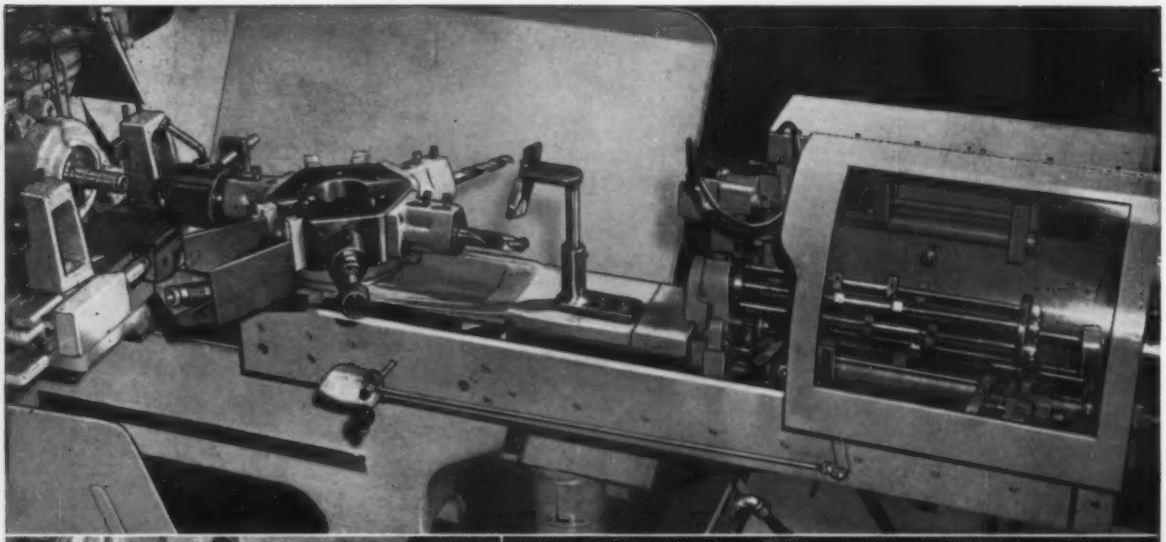
Write for Literature

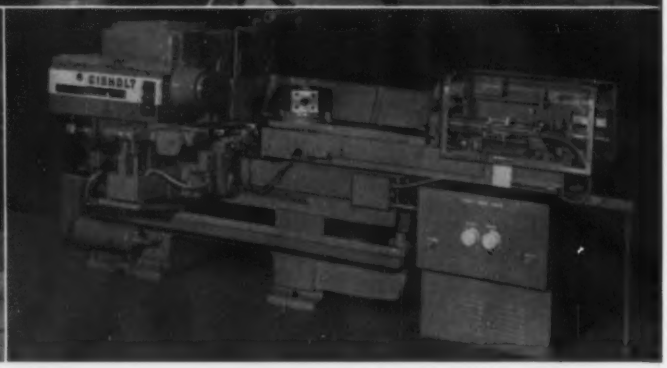
Smoothing Industry's Pathway ...*for Nearly Half a Century*

MESSINGER BEARINGS, INC.

D STREET ABOVE ERIE AVE.
PHILADELPHIA, PA.

RADIAL · THRUST · AND COMBINATION ROLLER BEARINGS · BALL BEARINGS





250% Production Increase with this setup

Gets full automation on small job-lot production runs using hydraulic drive on Gisholt Ram Type Turret Lathe

Floor-to-floor time on the job shown here—a threaded collar $3\frac{1}{8}$" long with $1\frac{11}{16}$" diam.—was cut from 8.1 minutes (with hand operation) to just 3.25 minutes. All operations and machine functions are automatically controlled with the Lynn Hydraulic Drive Unit on a Gisholt Ram Type Turret Lathe.

Here's how the finished workpiece is completely machined from bar stock in one fast, automatic operation: The stock is fed pneumatically against a turret stop, chucked, start-drilled, then finish-bored with a large drill. The hydraulic drive backs the drill out automatically to clear the chips, then rapid traverses back to where it left off before dropping into feed to resume drilling. Spindle speed automatically decreases as tools on the front cross slide form the O.D., drops into lower speed as O.D. is threaded, and into another low speed as radii are formed on the finished part and on the end of the bar stock. A tool on the rear cross slide cuts off the finished part and the job is done in record time.

With its massive design, reserve power and extra spindle speeds, the new Gisholt MASTERLINE Ram Type Turret Lathe is particularly adaptable to complete automatic operation with Lynn Hydraulic Drive. Contact your Gisholt Representative. He has the complete facts—and his wide experience may point the way to more profitable operation for you.

MASTERLINE GISHOLT SINCE 1887 GISHOLT

GISHOLT MACHINE COMPANY

Madison 10, Wisconsin, U.S.A.

DE LAVAL
IMO PUMPS

are now more versatile than ever

De Laval IMO pumps have proved that they do a dependable job over long years of service. The reason is IMO design simplicity. These constant displacement rotary pumps have only three moving parts—smoothly intermeshing rotors that propel the fluid axially in a steady flow without churning, pocketing or pulsation. There are no timing gears, cams, valves, sliding vanes, or reciprocating parts to wear or become noisy. *Quiet*, compact IMO pumps are excellent for direct-connected, high-speed operation.

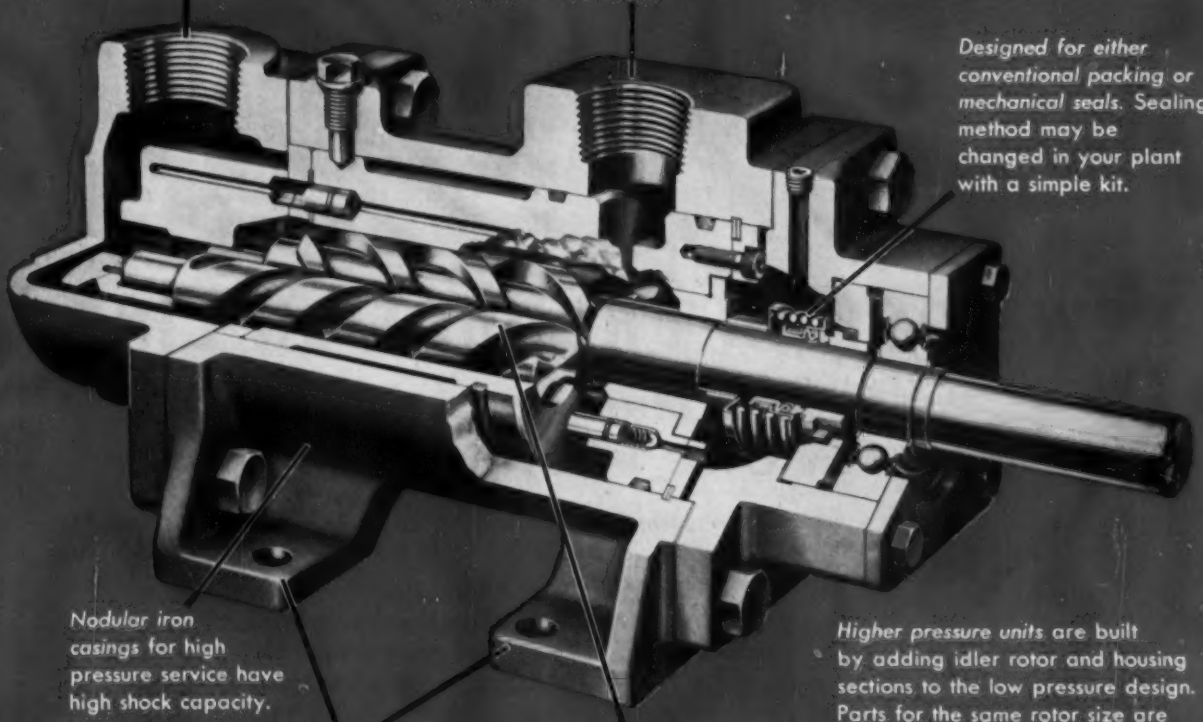
In addition to these basic pumping advantages, the improved IMO gives you important new benefits shown in the cutaway illustration below.

Inlet can be rotated to suit installation arrangement.

Discharge flanges are infinitely varied. You can use the most advantageous piping method to suit installation requirements.

DE LAVAL IMO PUMPS can also be used as hydraulic motors.

Designed for either conventional packing or mechanical seals. Sealing method may be changed in your plant with a simple kit.



Nodular iron casings for high pressure service have high shock capacity.

Any position mounting is possible without factory modification.

Higher pressure units are built by adding idler rotor and housing sections to the low pressure design. Parts for the same rotor size are interchangeable over the entire pressure range.

Internal parts are designed as a package so that units can be built into your machines.

Bulletin 3001 gives data on improved De Laval IMO pumps. Send for your copy today.

DE LAVAL *IMO Pumps*

DE LAVAL STEAM TURBINE COMPANY

899 Nottingham Way, Trenton 2, New Jersey

DL 419

NEW LOOK IN PRODUCTION LINES

From Material to Product in ONE PACKAGE

Need help to reduce your manufacturing costs and raise your production? Why not check Federal/Warco Packaged Production Lines – automated production from coil strip or sheet blanks to finished product.

Only Federal can offer you actual single source responsibility with major line components of resistance welders, punch presses, mechanical welder presses, automatic arc welders, expanders, destackers, transfer equipment and digital control – all designed and built in Federal's plants.

Federal pioneered and are leading designers and builders of packaged lines. Talk with a Federal representative when next you're planning production welding or press equipment.

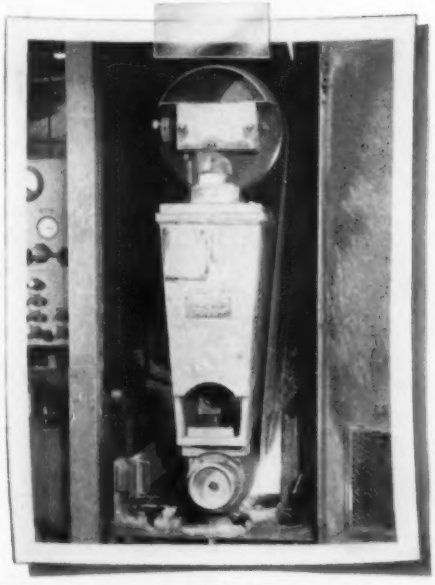
Federal / Warco
PACKAGED PRODUCTION LINES

THE FEDERAL MACHINE AND WELDER COMPANY - WARREN, OHIO

AFFILIATED WITH BERKELEY-DAVIS, INC., DANVILLE, ILLINOIS, MANUFACTURERS OF AUTOMATIC ARC WELDING EQUIPMENT.

A 3M Case History Report

GRINDING PRODUCTION INCREASED 10% WITH 3M ABRASIVE BELTS



MANUFACTURER: Houdaille Industries, Inc.

ADDRESS: Huntington, W. Virginia

PRODUCTS MANUFACTURED: Auto Bumpers

HOW 3M ABRASIVES ARE USED: "PRODUCTION" Brand Paper Belts are used to pre-finish hot-rolled steel alloy sheets prior to forming and plating.

OPERATIONAL DATA ON 3M METHOD: 3M Paper Belts in grits 80, 100, and 150 are used on a 12-head fully automatic sheet-polishing line. New and used belts are alternated in a specific sequence to get maximum belt life and best finish.

PROVEN ADVANTAGES OF 3M METHOD: Customer's own tests established a 10% increase in production using 3M belts. 3M has been selected as major supplier on the basis of this, plus consistent quality and expert engineering assistance provided.

OTHER 3M ABRASIVE PRODUCTS IN USE: "TRI-M-ITE" Resin Bond Cloth "PG" Wheels; "Three-M-ite" Resin Bond Cloth Belts, and 3M Type "C" Fibre Discs are used for occasional clean-up and blending operations.

WANT MORE INFORMATION? Send for free manual, "Finishing Steel with 3M Coated Abrasives". Write to 3M Co., St. Paul 6, Minn., DD-58.

3M Coated Abrasives

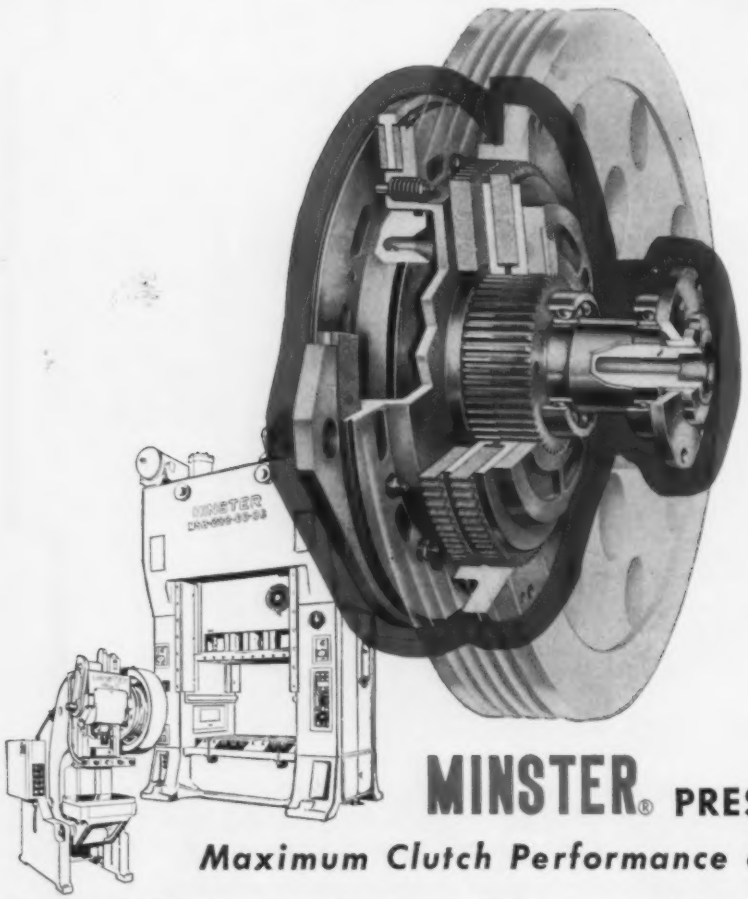
"PRODUCTION" PAPER BELTS

MINNESOTA MINING AND MANUFACTURING COMPANY

...WHERE RESEARCH IS THE KEY TO TOMORROW

3M COMPANY

There's a BIG DIFFERENCE in AIR FRICTION CLUTCHES



THE MINSTER CLUTCH IS MORE EFFICIENT

MINSTER® PRESS USERS *Always Get Maximum Clutch Performance and Longest Clutch Life*

It's not unusual for the clutch and brake on a Minster press **to perform, shift after shift, on rapid single cycle operation for eight, ten or twelve years without ever being disassembled for relining.**

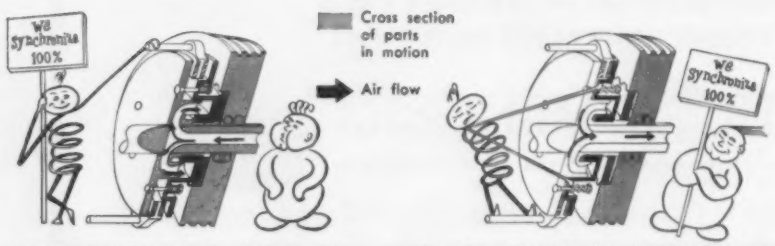
Users of all types and sizes of Minster presses consistently get that kind of service from the Minster patented Combination Air Friction Clutch and Brake.

Improvements in the design of the Minster clutch are being made continuously by Minster, **the press builder that developed and pioneered the air friction clutch for presses.** Performance records prove that, with a Minster clutch, the length of service and operational value is there.

Next time you're evaluating press equipment or considering a press clutch conversion, bear in mind, all air friction clutches are *not* alike.

THE MINSTER MACHINE COMPANY, MINSTER, OHIO

RUN **STOP**



AIR IN—CLUTCH ENGAGED—(brake off) AIR OUT—BRAKE APPLIED—(clutch disengaged)

Compare the number of parts . . .

The Minster Combination Air Friction Clutch and Brake is one synchronized unit with one moving member engaging the clutch by air pressure in one direction and applying the brake in the opposite direction as air exhausts. Movement from full brake to complete engagement is the absolute minimum, assuring fast action at any speed for quick, controlled stopping.

AMBALLOY... A. M. BYERS ELECTRIC FURNACE QUALITY STEEL PRODUCTS

FROM HIGH-GRADE PRODUCTION FACILITIES...BETTER END PRODUCTS

The consistent quality of AMBALLOY specialty steels—stainless, alloy and carbon—is rooted in the exacting quality control of our high-grade production facilities.

We match these facilities with sound furnace practice and skillful melting procedures. Precise control by men of ability and experience assure the quality of each heat. This detailed attention we give to every step of the steel-making process means better end products for users of AMBALLOY.

And to provide you with helpful solutions to your material selection problems, Byers offers a staff of highly trained metallurgists. We can serve you with knowledge and facilities that put your order where you want it, when you want it. Check Byers first. Write or call for details. A. M. Byers Company, Clark Building, Pittsburgh 22, Pa.

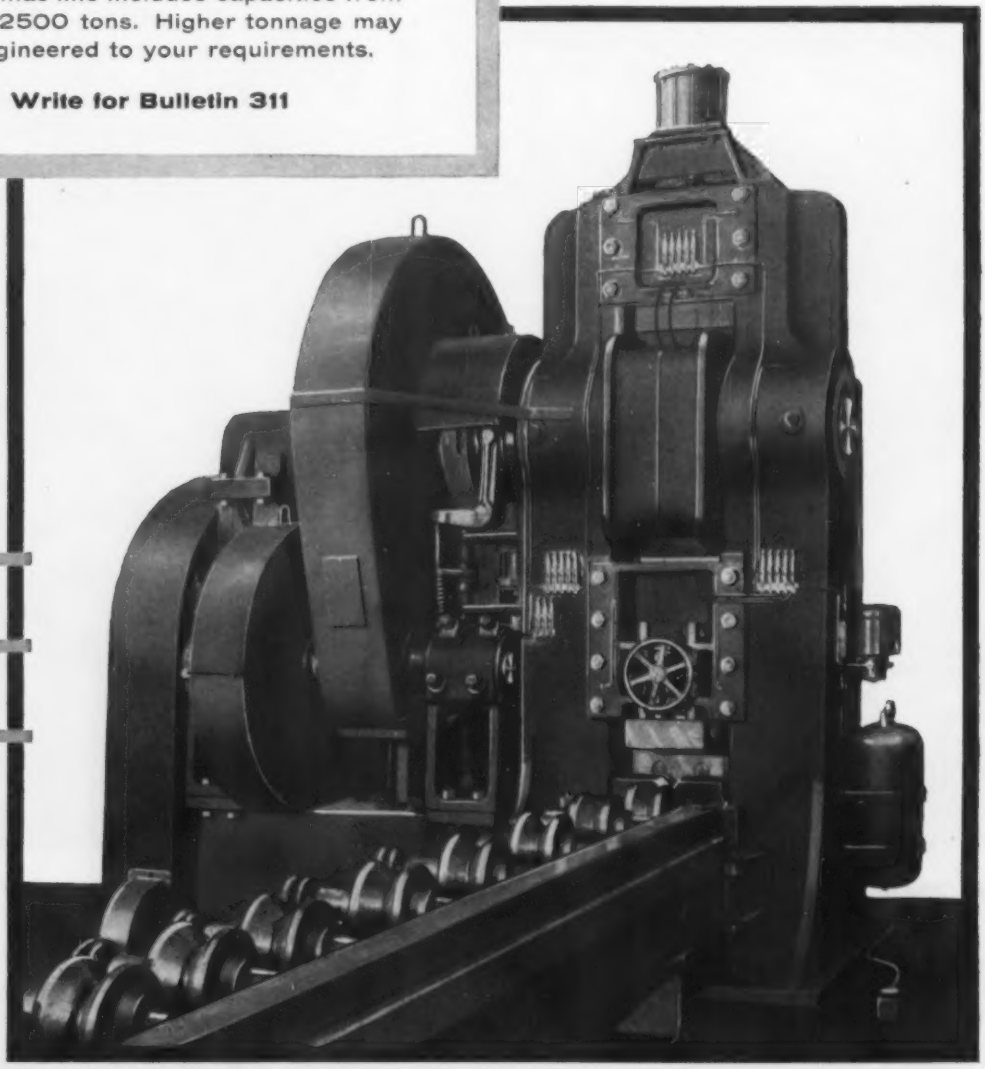
A growth company with the emphasis on quality and service **A. M. BYERS COMPANY**

THE TREND IS TO THOMAS *FOR* BILLET SHEARS

Here illustrated is a Thomas Billet Shear . . . sturdily built, of all-steel construction . . . with "beef" where "beef" should be . . . a machine you don't need to pamper! It'll insure more dependable production day in and day out . . . with more strokes per minute. It's rigid, accurate, rugged, faster!

The Thomas line includes capacities from 500 to 2500 tons. Higher tonnage may be engineered to your requirements.

Write for Bulletin 311



THOMAS also builds

PUNCHES

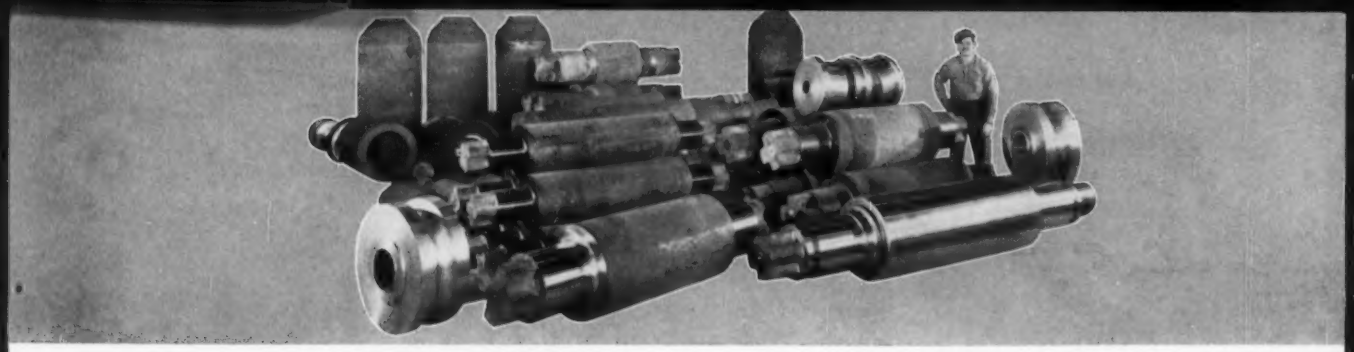
PRESSES

BENDERS

SPACING MACHINES

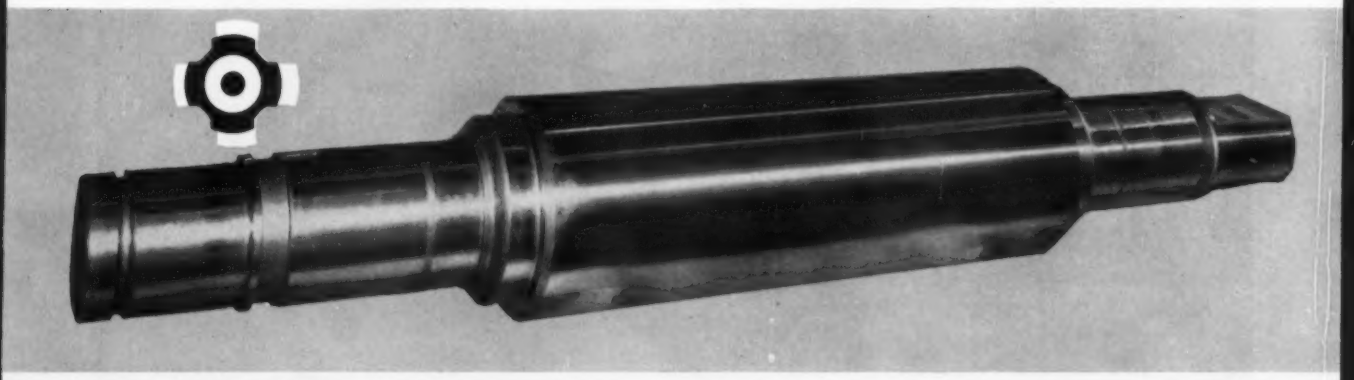
73

THOMAS MACHINE MANUFACTURING CO. / PITTSBURGH 23, PA.



MAGALOY (nodular iron) ROLLS

FROM 7" TO 42-1/2" DIAMETER



TYPICAL APPLICATIONS

MAGALOY GRADE "A"
(Sclerescope Hardness 30-38)
Piercing Mills

MAGALOY GRADE "B"
(Sclerescope Hardness 45-55)
Blooming Mills • Bar & Billet Mills–Roughers
Rod Mills–Roughers • Plug Mills (5½" and over)
Skelp Mills • Hot Sheet Bounce Mills

MAGALOY GRADE "C"
(Sclerescope Hardness 58-65)
Merchant Mills–Leaders and Finishers
Rod Mills–Intermediate Train • Hot Strip Mills
Cont. Bar & Billet Mills–Intermediate & Finishers
Plug Mills (up to 5½")
Tube Mills–Forming & Welding, Sizing, Reelers
Straightening • Skelp Mills • Edging Mills

MAGALOY GRADE "D"
(Sclerescope Hardness 66-70)
For applications requiring higher-than-average strength and hardness penetration.

• MUCH LESS BREAKAGE • BETTER SURFACE ON ROLLED MATERIAL • LOWER COST PER TON ROLLED • WEARING QUALITY OF GRAIN ROLLS • PHYSICALS EQUAL TO CAST STEEL • UNIFORM HARDNESS PENETRATION • SUPERIOR MACHINING PROPERTIES

A SPECIALIST AND A PIONEER IN NODULAR IRON

One of the first licensees (1951) for nodular iron, Aetna-Standard's foundry has built a reputation as a specialist in these rolls (trade name — Magaloy). In the making of nodular iron rolls, control of penetration is most important. So is the skill of the foundry to deliver the same uniformity of rolls order after order. As a pioneer and a specialist in nodular iron, Aetna's foundry has an excellent reputation among roll users and suppliers, particularly for penetration and uniformity of rolls.

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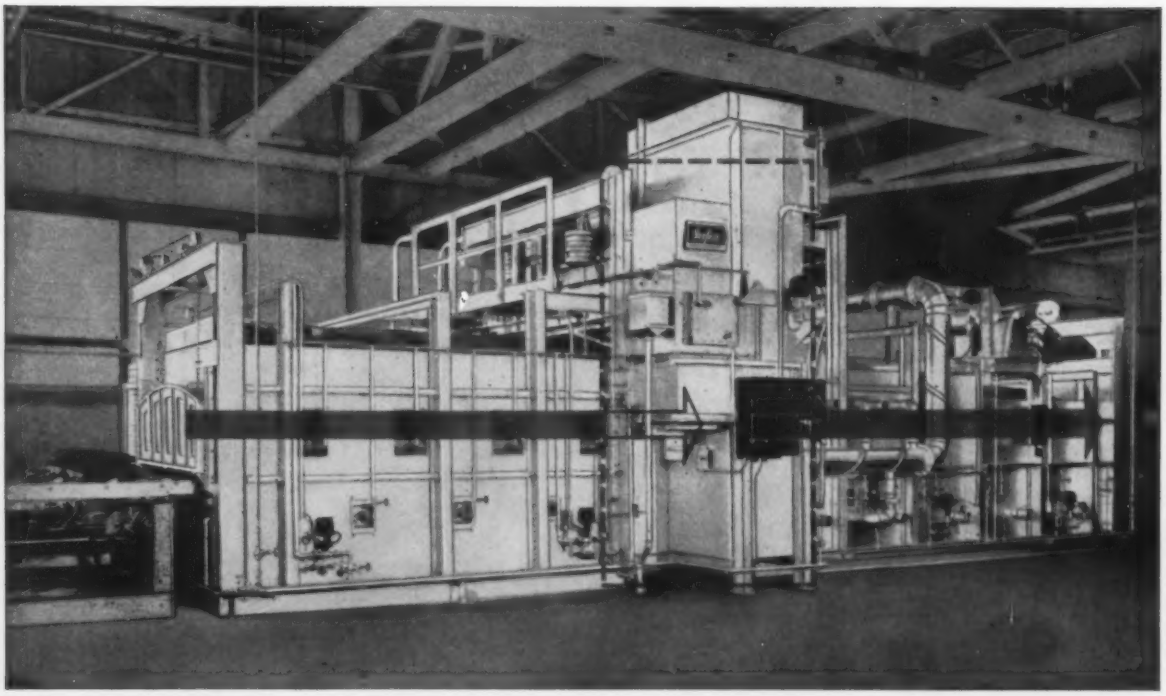
THE AETNA-STANDARD ENGINEERING COMPANY

GENERAL OFFICES: PITTSBURGH, PA. • PLANTS: ELLWOOD CITY, PA., WARREN, OHIO • RESEARCH LABORATORY: AKRON, OHIO

CHILLED AND SAND IRON ROLLS • MOLY CHILLED IRON ROLLS • ASEX GRAIN ALLOY IRON ROLLS • ALANITE GRAIN, NICKEL CHILL (A-B-C-D) • RAIL FINISHING ROLLS • MAGALOY ROLLS • TUBE MILL ROLLS & RINGS

Superfast cooling for cycle annealing



A furnace-within-a-furnace makes this Surface cycle annealer one of the most versatile heat treat units in the country. It anneals, cycle anneals, and normalizes gear forgings of different size, shape, and alloy at the net rate of 864,000 lbs. per month or better.

Such exceptional versatility is achieved by a superfast cooling zone. Really a full convection furnace within a direct-fired furnace, this zone is isolated by refractory doors. It can be used or by-passed, depending on which of many cycles the customer wants. As a result, the customer can heat treat as many as 13 different alloys in this one furnace.

Adding to the flexibility of the furnace is a modular tray design. Each module is an 18x20-inch chrome alloy casting. Modules can be combined to hold any size of work up to 800 pounds. They are also used to carry work outside the furnace.

o This furnace-within-a-furnace is another proof that Surface engineers are old hands at creating new ideas in heat treating.

Write for Bulletin SC-146 on cycle annealing.

Surface Combustion Corporation, 2373 Dorr St., Toledo 1, Ohio. In Canada: Surface Industrial Furnaces, Ltd., Toronto, Ontario.

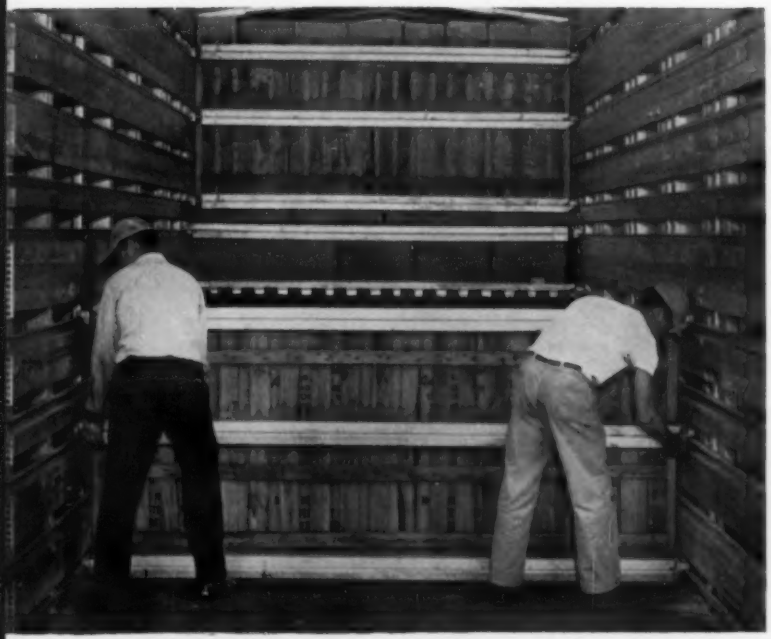
Surface

wherever heat is used in industry

These workmen are using Youngstown Yoloy "E" high-strength steel to fabricate belt rails—a component of DF Loaders—at Evans Products Co.

Accent on Excellence

Youngstown Yoloy "E" high-strength steel



Two DF* Loader-equipped railroad cars easily do the work of three standard box cars. That's because DF cars (31,000 now in service) can be loaded to capacity—earn greater revenue for railroads.

Portions of Evans DF Loaders are fabricated from Youngstown's Yoloy "E" Angles and Hot-Rolled Yoloy Sheets by Evans Products Company, Plymouth, Michigan. All Yoloy Steels are produced to meet a wide range of applications, where high strength and corrosion-resistance are of prime importance.

Wherever high strength steel becomes a part of things *you* make, the high standards of Youngstown *quality*, the personal touch in Youngstown *service* will help you create products with an "accent on excellence".

**DF is a trademark of Evans Products Company.*

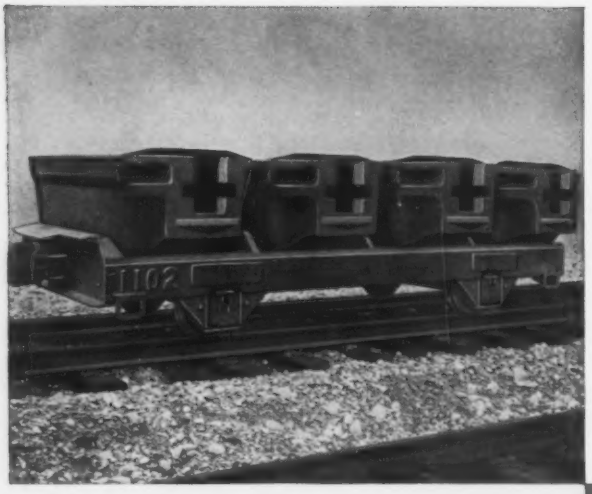
EVANS DF LOADER . . . *Locks in lading, eliminates damage and dunnage*

Send for free technical bulletin on Youngstown Yoloy "E" Steel.

QUALITY YOUNGSTOWN SERVICE

THE **YOUNGSTOWN** SHEET AND TUBE COMPANY

Manufacturers of Carbon, Alloy and Yoloy Steel, Youngstown, Ohio

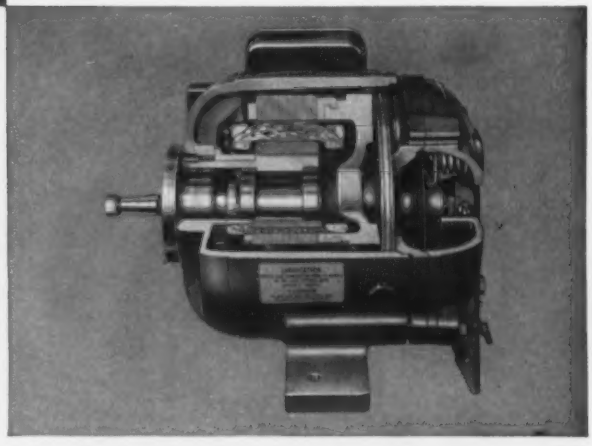


THE HEAVIER THE LOAD...

the more you need HYATTS . . . because nothing can compare with the cylindrical roller bearing for rugged, load-carrying capacity and continuous operation under adverse conditions. That's why leading steel mills specify HYATT Hy-Rolls for applications like these charging cars.

THE HIGHER THE SPEED...

the more you need HYATTS . . . because their internal clearances are stringently controlled for smoother operation. Built of the finest steels, HYATT Hy-Rolls operate with peak efficiency at high speeds as in this non-ventilated, continuous-duty textile loom motor.



THE MORE YOU NEED *Cylindrical* HY-ROLL BEARINGS

Today, as new industrial designs require heavier loads and higher speeds crammed into smaller housings, engineers are turning to HYATT Roller Bearings, America's most complete line of cylindrical roller bearings. They find their problems are solved quickly with bearings like the shouldered-race HYATT Hy-Roll that will handle heavy radial loads while taking a surprising amount of thrust. Contact your nearest HYATT Sales Engineer for recommendations—You'll find him a mighty big help! Hyatt Bearings Division, General Motors Corporation, Harrison, N.J.; Pittsburgh; Detroit; Chicago; Oakland, California.

THE RECOGNIZED LEADER IN CYLINDRICAL BEARINGS

1908–1958 GM FORWARD FROM FIFTY

HYATT HY-ROLL BEARINGS FOR MODERN INDUSTRY

... Results of a Superior Beginning

The countless parts and products made from Roebling high-carbon steel spring wire and flat spring steel have one thing in common . . . their superior quality. This, of course, is related to the inherent fineness of the materials.

The variety in which Roebling offers these spring materials is equally impressive. They are available in hard drawn, hard rolled, annealed or soft, tempered or untempered. Types include zigzag and no-sag wires; upholstery and mechanical spring wires; valve spring wire; clock- and motor-type spring steels and flat spring steels of all types and description.

Whatever the type, size or characteristics you require—Roebling can fit your needs exactly. You'll find that Roebling quality means maximum production from your machines and consistent uniformity in your product.

For spring wire and flat spring steel information, contact Wire and Cold Rolled Steel Products Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

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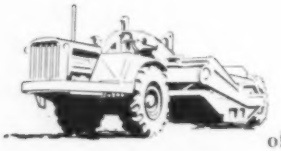
Roebling... Your Product is Better for it

BETTER PROTECTION for metal surfaces

Isophthalic based paints last longer under severest conditions—*resistant to checking, peeling, chipping*



Now you can add years of protection to metal surfaces thanks to the adhesive properties of Isophthalic based paints. Better film to metal bond means improved performance with fewer prime coats required—saves time, cuts painting costs.

Surface coatings made with Isophthalic have better abrasion resistance than ordinary paints, hold up longer under severe weather conditions, provide improved gloss retention. Whether you buy exterior or interior paints, finishes for furniture or tough coatings for machinery it will pay you to find out about Isophthalic based paint.

ASK YOUR PAINT SUPPLIER about finishes made from this new material—*Isophthalic.*

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single stand reversing plate mill

BLAW-KNOX PLATE MILLS

Blaw-Knox designs and builds a full range of continuous or single stand reversing plate mills for rolling ferrous and non-ferrous slabs. Other Blaw-Knox equipment for the metals industry includes complete rolling mill installations including all auxiliary equipment for ferrous and non-ferrous metals, iron, alloy iron, and steel rolls, Medart cold finishing equipment, carbon and alloy steel castings, fabricated steel plate or cast-weld design weldments, steel plant equipment, and heat and corrosion resisting alloy castings.

BLAW-KNOX

BLAW-KNOX COMPANY

Foundry and Mill Machinery Division
Blaw-Knox Building • 300 Sixth Avenue
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"Maybe there's a steel to do it better . . . ask Ryerson!"

If there is a better steel for your operation, Ryerson can tell you. A Ryerson specialist will assist you in solving the problems of steel application and fabrication, too.

Ryerson strategically located plants carry large stocks to meet virtually every steel need. That's why the Ryerson specialist will suggest only the best steel for the job. He can offer you facilities and experience to help with design problems.

And as the Ryerson specialist works with you on problems of steel selection, he will also develop a plan for efficient delivery. This means a smoothly flowing production line while inventory investment is kept at a minimum.

There's a steel specialist at your nearby Ryerson plant ready to work with you. So—when you have a question of the best and most economical steel to use, ask Ryerson.

RYERSON CERTIFIED QUALITY

RYERSON STEEL®

Member of the MLAM Steel Family

Principal Products: Carbon, alloy and stainless steel—tubing, bars, structurals, plates, sheets—aluminum, industrial plastics, metalworking machinery, etc.

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Filing Machine Uses Disc

Designed for materials that do not lend themselves to grinding, such as non-ferrous metals, plastics, wood, leather, and hard rubber, a filing machine uses a non-clog 10-in. disc. In getting a smooth finish, the disc removes material in the form of chips rather than dust. The backing plate of the thin steel disc has spokes that act as a fan to draw air between the teeth for cooling.

New Car Inventories Cut

For the second straight month sizeable cuts have been made in new car inventories. There were an estimated 777,445 cars in dealer stocks and in transit on May 1. This compares with 833,201 on April 1 and 865,556 on March 1. Dealer stocks now total about a 56-day supply at a selling rate of 14,000 units per day, down from a 60-day supply a month ago.

Incentive for Management

A major steel mill is testing a new management incentive plan. It extends to a wide range of people in research, administration and other functions not directly tied to production. The base of the plan is on cost cutting and on share of the market gained by the mill.

Finds Benefits in Ceramics

An automotive manufacturer reports increasing application of ceramic cutting tools for a variety of jobs including precision transmission parts. In addition to getting higher quality in surface finishes and longer tool life, the firm is gradually boosting cutting speeds. Output on one job increased 315 pct, and in another, tool life jumped 360 pct.

Consider Gas From Coal

If petroleum products hold their present price curve, production of gas from coal will not only be economic, but will be produced on a base-load basis within the next 10 years, a recent study suggests. A pilot plant began operation recently and another is under construction to study economics and technology of the process. First quantity production plants will probably locate in lignite fields through which existing petroleum product pipelines already pass.

No Downtime in 10 Years

Operating on a round-the-clock basis, an automatic unit has been removing insoluble waste material from emulsified cutting oils for 10 years with no downtime for repairs. It has resulted in increased productivity and reduced maintenance for the 42 machine tools connected to the system. The pushbutton clarification of the coolant eliminates cleaning machine sumps of settled-out sludge.

Super Alloy for Jet Engine

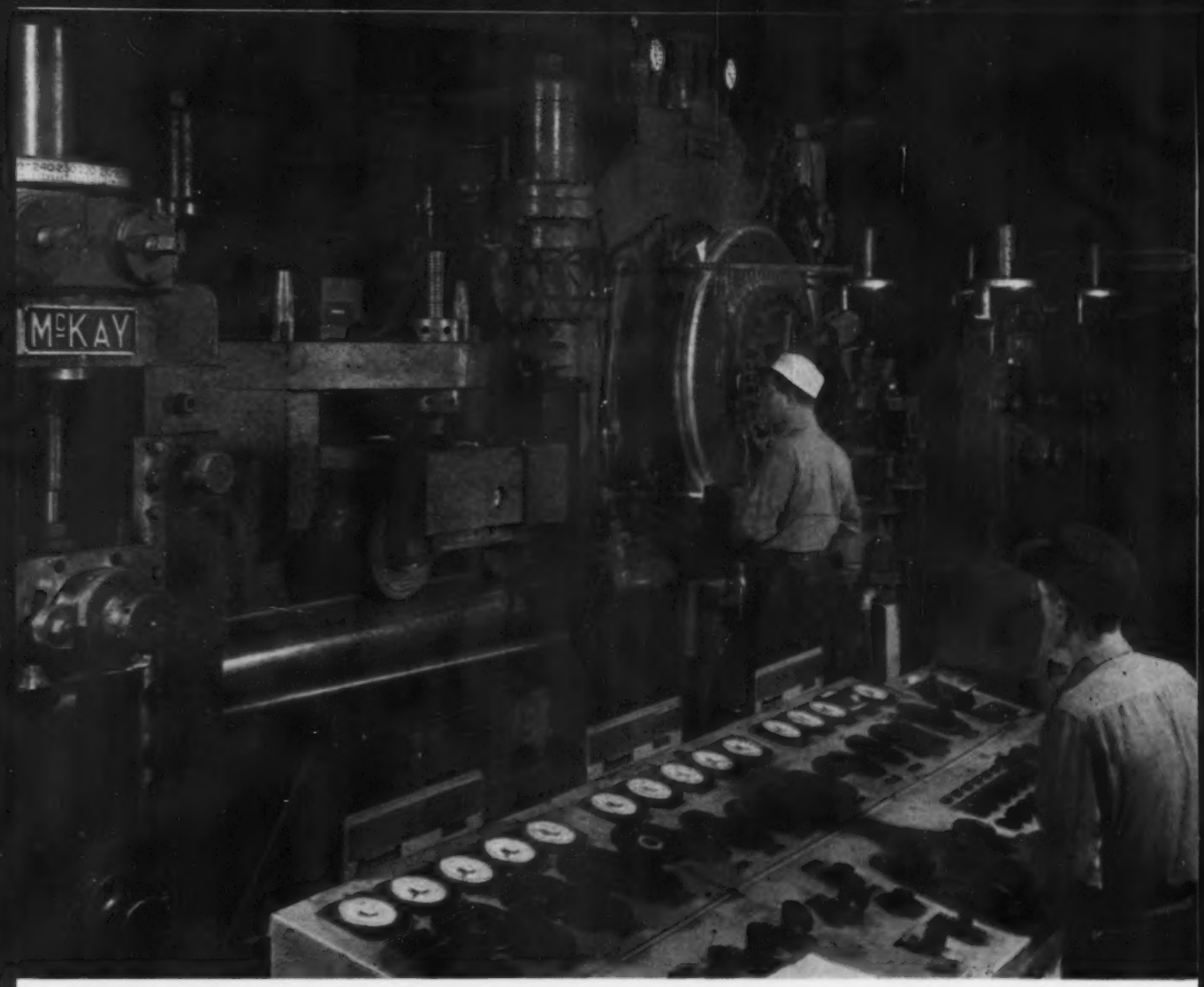
A new alloy is expected to raise the operating limits of jet engine turbine blades to 1800°F. Although still in the initial stages of development, the material is meeting its "predesigned" requirements of castability, oxidation resistance, stress-rupture strength, and ductility.

Water Emulsion Auto Paint

Reports from automotive sources say progress is being made in development of nonflammable, water emulsion paints. Improved primers and paints now in use are harder and more durable. At the same time cuts in drying cycle time result in 50-pct reduction in drying facilities with savings in floor space and equipment investment.

Vapor-Tight Slide Fastener

Tests show no measurable air leakage at 0.5 to 12.0 psi during 24 hr despite 5000 complete openings and closings. Metal teeth and clips of the fastener are mounted in matching S-shaped folds in the edge of a neoprene-coated nylon fabric. Meshing of the teeth presses neoprene covered lips together to form continuous linear seal. Fasteners can be fitted to a variety of equipment by cementing or vulcanizing.



Advanced Design McKay Mill Sets Pipe Production Records At J&L

New era in pipe production comes of age as McKay incorporates oil cooled transformer, continuous visual recording of weld pressure and induction seam annealing, automatic control of weld speed and heat and synchronization of cut-off in large resistance weld pipe mill.

RECENTLY Jones & Laughlin Steel Corporation set into operation their new McKay Pipe Mill capable of producing 150 feet of 12¾" OD electricweld pipe every minute. More important than the speed, according to J & L officials, is the quality of the product. McKay's forced oil cooled transformer assures more pipe per kilowatt hour. It is the first 2400V transformer designed for continuous operation at frequencies up to 180 cycles.

Hydraulic load cells measure forging and electrode pressures at the weld zone. Weld speed and heat are controlled with precision to assure the most uniform welds possible at any speed with no readjustment necessary. Continuous seam annealing assures uniform ductility of pipe, and for the first time a synchronized cut-off has been successfully adapted to a large mill. The mill has several other advanced innovations applied to a line this size for the first time. To get all the facts talk with a McKay engineer soon.

McK

THE McKAY MACHINE COMPANY
YOUNGSTOWN, OHIO

Pacific Coast Representative:
Engen Industrial Company, Los Angeles, California

No. 363

P.A.'s Are in Control, But Worry About Their Inventories

It's a rare P. A. who doesn't have an inventory problem. They wonder what will happen when everybody jumps at once.

Some estimate steel purchases will be up 25 pct in the second half.—By K. W. Bennett.

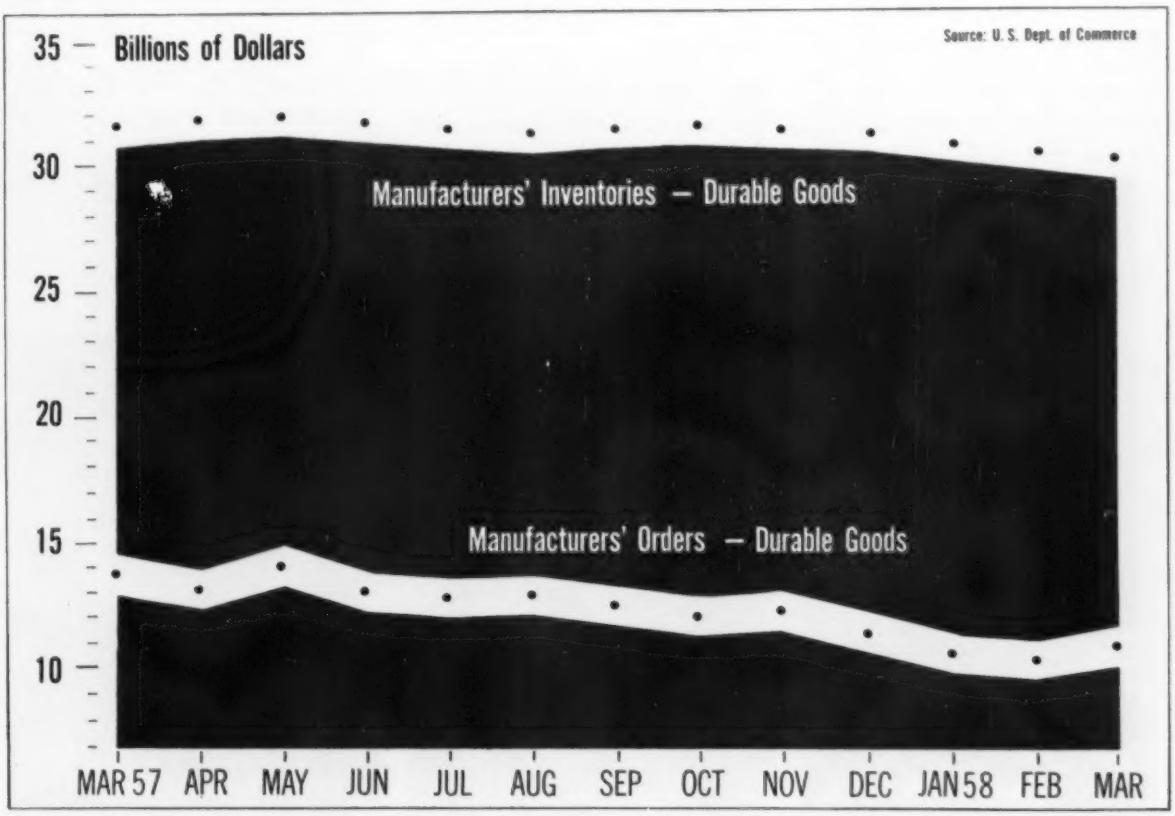
■ On the surface, most purchasing agents are calm, and appear happy to be sitting in the driver's seat.

But a growing segment of buyers are beginning to examine bone-bare inventories with misgivings. This was the undertone of shop talk last week at the annual convention of the National Association of Purchasing Agents in Chicago.

Who's Uneasy? — Prominent among the alarmists were those who were badly burned in the steel shortage of 1955—heavy users of sheet, plate and structurals. They know that galvanized sheet is sold out for June. Tinplate is in much the same shape. Steel bookings for June have shown strong gains when compared with any month of this year.

But tempering the feeling that inventory reduction may have been pushed too far are these facts: In

Orders Pick Up, Inventories Still Drop



THE P. A.'s PROBLEM: Although stern inventory control measures were instituted in June, 1957, contracting rate of production prevented inventory levels from dropping until the first of 1958. Now, P. A.'s face the dilemma of when to start deemphasizing inventory cuts and start balancing out.

late 1954, sheet mills were at full capacity, 20 turns a week, before steel went critically tight. Now they're rolling at only 15 to 16 turns, or 75 pct of capacity.

July Safety Valve—June bookings for steel cover roughly three weeks of the month. Mills have another five turns of open space to book. When this is filled, they have another five turns per week of reserve capacity.

So the purchasing man can still play a waiting game. His inventory is low, and he knows it. His safety valve is the expected drop in steel consumption in July.

Anybody's Guess—After that, the ice gets pretty thin. Despite continuing reports that individual companies will continue to reduce inventories of steel and other metals, buyers are weighing these factors:

1. A running analysis of June steel ordering indicates that even companies which admittedly are placing June orders to beat a price increase are not buying at a rate justified by sales of their own finished goods, or their historical average June steel purchases.

2. In many cases, top management is ordering inventory reduction because total inventory tonnage is still regarded as high. Yet an item-by-item inventory evaluation suggests inventories are dangerously low in important product lines on which production is scheduled to increase.

3. All inventories are based on short mill lead times. So that a factory with "thirty days" inventory may have 10 days steel in the plant, and 20 days back at the steel mill, where it will be affected as lead times lengthen.

4. August will see the return of many buyers, particularly of steel, who've not been in the running since 1957. Because their inventories are stripped, they'll need steel quickly when they finally buy.

5. Through much of 1957 and nearly all of 1958, the average steel buyer bought less steel than he used. Now, he must correct the other way. He most probably will have to buy more steel than he actually uses. He must re-balance his inventory.

6. The big inventory buildup of 1957 was in finished goods, not raw materials. With finished goods inventories receding, the manufacturer must refill his retail pipelines with new models. And the manufacturing rate for these new models must more nearly follow the actual sales of finished goods than has been the case since last November.

Up to 25 Pct More — For the record, purchasing agents talk of second half 1958 with somewhat guarded optimism. Off the record, they are betting they'll buy 20-25 pct more steel in third and fourth quarters of this year than they did in first and second.

The question, "but what about your inventory right now" draws a gamut of reactions. The range is from, "We've got it down into pretty good shape—if business doesn't get worse," to "I've whittled our inventory down so far I'm scared."

Speaking off-the-record, the average steel buyer forecasts July slump in steel buying. This is partly because of the heavy wave of plant vacations; partly because he may be buying extra steel in June to beat the expected July 1 price increase; partly because his own sales department is shy about forecasting any strong gain in sales for at least all of August.

How It Looks—Here are some

How P.A.'s Evaluate the Business Trend

DAVID GIBSON, Worthington Corp.: "Things will be humming by the end of the year."

F. D. SICKLESTEEL, Ex-Cell-O-Corp.: "Price cuts are very, very scattered."

H. E. CROSS, U. S. Pipe and Foundry: ". . . Buying seems to be moving up."

sample off-the-record comments:

From an important user of sheet: "Our July buying will drop below June by 30 pct. Why kid about it? I'm beating a price increase. In August we'll come back strong and run at the August level through December. I haven't got enough steel in stock to handle even a model change and I've warned the Front Office.

"I used 35-40 day notice to get enough steel in motion to handle a change. We say we have a 30 day inventory, on the books. But remember, only 7-10 days of that steel is actually in our plant. The rest is being rolled at the steel mill or is in-transit to our plant . . . We'll use about 10 pct more steel in second half than first—on a conservative forecast."

Up in Second Half — From a major manufacturer of heavy equipment: "We'll take steel in July at the same rate we did in June. But we'll move up through July-August on our steel intake. Then we cut back slightly in September-October, and come back strong in November and December. Conservatively, we'll buy 15-20 pct more steel in second half than first."

Another heavy equipment producer: "To tell you the truth, we won't even cut back in July. Our third quarter will be about like the second, but in July we'll increase our steel buying by 5 pct over June levels. We make the big jump in October, and then we'll go up over the previous month by about 15-20 pct. At the moment there's not much I can say about it, but our inventory is too darn low; and I'm particularly worried about plate."

Automotive Outlook—From an automotive industry buyer: "We've boosted our buying in the past week, but only for ending production on '58 models. We're geared for an early start on the '59's. I figure we'll begin moving up at the end of July, after falling 15 pct below June on our July steel intake. But don't forget, our inventories are at rockbottom, and any June buying we do isn't going to change that. We've got the lowest inventory that I've seen since 1949."

Earthmoving equipment P.A. "We'll begin a slow increase in early August, even though we'll still be buying less steel than we're chewing up. Our steel purchases won't match our consumption until October. But even so, we'll be buying more steel in August than we bought in August '57, and the same is true for each month thereafter. Our requirements will go up about 10 percent per month."

Plate Outlook—Plate fabricator: "You notice plate is moving up. Our plate consumption is going to go 20-25 pct over second quarter during third quarter. And I'm betting, that if the Supreme Court breaks loose on this Memphis case, and the linepipe companies really begin to buy—then you can count on it. As far as plate goes, all Hell is going to break loose."

Plate and sheet fabricator: "We're still a little heavy, inventorywise, on plate. So management has me reducing sheet stocks to bring our overall tonnage into line. But we'll up our steel buying in second half by 25 pct.

"During 1957 we cut our inventory in half. We will have to step up our buying at the end of July, and that includes plate. Our strongest product gains are coming in the lines in which we use plate. Matter of fact, I'm worried about it; I called an Eastern mill this week for a quote on a low alloy, high strength plate and they started talking about September shipment."

Tank fabricator: "We're beginning to reconsider on our plate stocks. We're not scared stiff, or anything like that. But we picked up some new tank orders in the past couple of weeks. So did the competition. Now we hear the linepipe people are booking some more plate. I know that when I tell the mills next Monday, I won't be able to get any more June plate. That means we'll go from two weeks delivery to 3-4 weeks, unless the mills go on additional turns."

F. C. WALTERS, Esso Standard: "If we haven't bottomed out already, then it's just ahead."

WAYNE HAMLETT, Continental Machines: "We've observed a general (price) uptrend."

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over 30 years old. Railroad men

Are Railroads Over the Hump?

Smathers Bill, now before a Senate committee, tosses a lifeline to the railroads.

It would allow them to stabilize spending and readjust freight rates.—By G. J. McManus.

▪ The railroad situation is rapidly coming to a head.

With major roads riding toward bankruptcy, a Senate subcommittee has proposed sweeping changes in the transportation code. Depending on how recommendations are received, events of the next two months could produce these results:

1. A sudden surge in railroad spending and a permanent change in the buying habits of the roads.

2. Sharp increases in railroad rates on bulk materials; broad cuts in rates on finished products.

3. With the freight car fleet in poor shape and carbuilding slowed to a snail's pace, a sudden spurt in carloadings would put a squeeze on plants with low inventories.

Losses Are Heavy—What's happened is this: A 20 pct drop in carloadings this year showed up the sick financial condition of most roads. Class 1 railroads lost over $10 million in February. Railroad working capital dropped under $400 million, which is approximately a 12-day supply. The Pennsylvania Railroad is working on a 3-day cash margin.

On April 30, the Senate subcommittee on surface transportation brought out a report dealing with railroad problems. Called the Smathers report, the study recommends two basic changes.

It proposes that railroads be given more leeway in setting rates. It suggests that a reserve fund for railroad equipment spending be set up by means of tax deferrals. As a stopgap measure, it calls for government backing on loans to hard-pressed and credit-shy railroads.

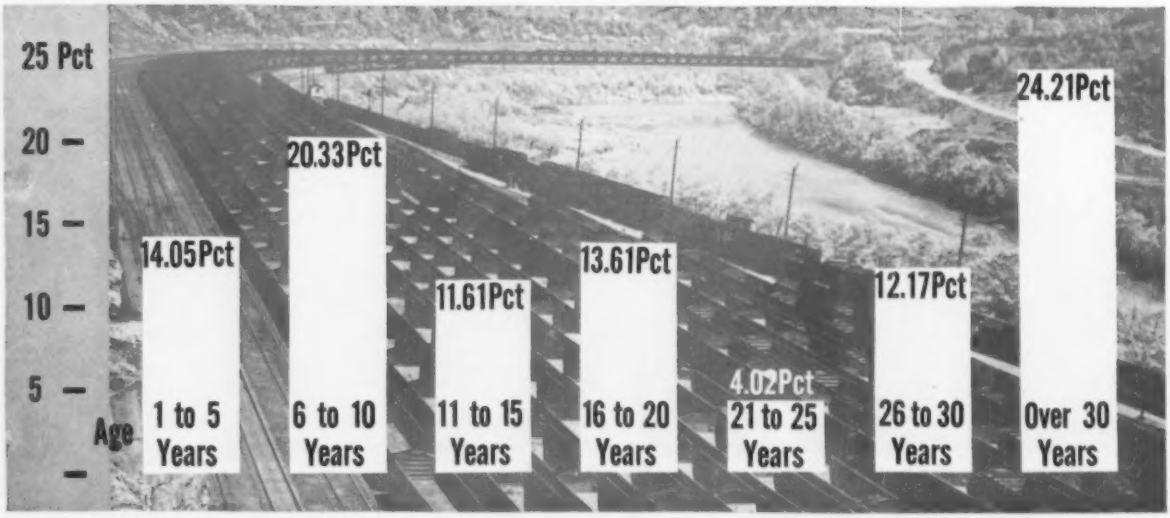
Chances Are Good—These proposals are now in bill form before the Senate Committee on Interstate and Foreign Commerce. Railroad men feel they may get all or part of the Smathers package this session. If they do, the railroad industry and its suppliers will get a big lift.

New York Central president Perlman said his road will start a $150 million program if the bill goes through. Other railroads are in a similar position. They need 80,000 cars a year to stay even with retirements. They are currently ordering less than 300 cars a month. Work on 20,000 new cars in railroad shops has been held up.

Peaks Come Fast—At the moment there is anything but a car shortage. Idle cars are stacked up all over the country. But traffic men remember it was only last fall that a car pinch brought a hike in demurrage rates and a tightening of service rules. A freight spurt now could bring one of the worst binds ever.

For one thing the railroad fleet, which just scraped by last fall, is steadily deteriorating. Out of 1.7 million freight cars, 25 pct are

Why Railroads Need Freight Cars— The Rolling Stock Gets Older



Source: American Railway Car Institute

over 30 years old. Railroad men say 400,000 cars should be scrapped. Average car age is 20 years.

Rate-Setting Change—Moreover, the roads are out to increase their market. The Smathers bill would change the basis for rate making from a comparison with other modes to the costs of the applying company. The railroads say the old method protected trucks and barges unfairly. The roads say they can set lower rates than competitors in many cases and still make a reasonable profit.

With the new concept, they say they can make a better fight for high rated freight, now moving mostly by truck. At the same time, some traffic men expect railroads to increase rates on bulk materials like ore, coal and stone. These rates were increased in February but the railroads reportedly feel further adjustment is needed.

Spending Increase—To prepare for new competition and to maintain existing service, the railroads must start spending. The credit backing provided in the Smathers bill could bring an immediate loosening of purse strings.

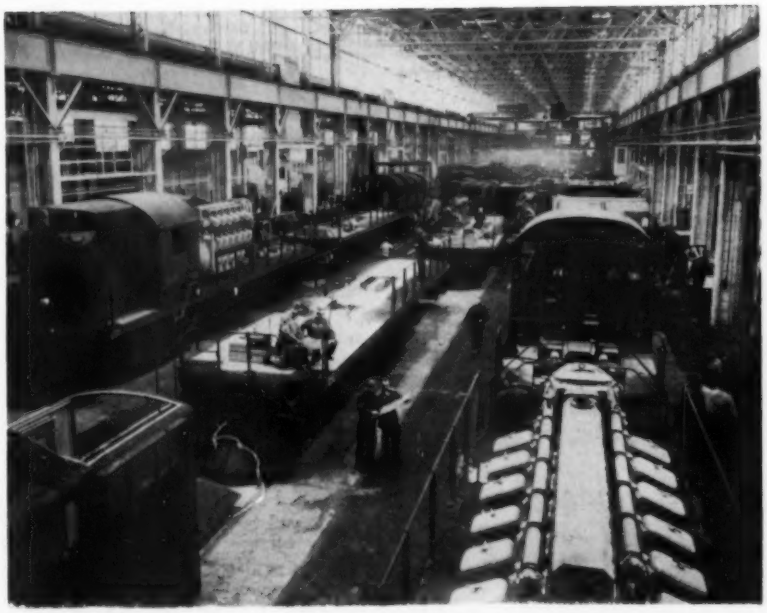
The Smathers bill would allow railroads to divert a portion of federal taxes into a reserve fund. A railroad could draw on the fund to buy new equipment over a period of five years. Any money left after five years would be taxed as income. This arrangement would permit the roads to grow on a steady basis.

And growth is what the railroads need most of all, say some.

New Molybdenum Plant

American Metal Climax, Inc., will build a $1 million plant for the production of molybdenum and its alloys.

It will be a one-story building, with 23,000 sq ft of floor space, at Coldwater, Mich. It will have an annual capacity of 800,000 lb of castings. Initial production is expected by the third quarter.



NEW SHOP: Switching engines are shown in varying stages of assembly at Alco's new multi-line locomotive assembly plant at Schenectady, N. Y.

Alco Opens Throttle

▪ Alco Products, Inc. is showing its faith in the railroad industry's future by going full-speed-ahead on a $4 million modernization program at Schenectady, N. Y.

The first phase of its program—a consolidation of facilities—was completed last week. It includes a new locomotive plant, described by the company as the only straight-line production installation of its type in the world, and the centralization of seven research and development laboratories under one roof.

Started Last Year—The projects were begun last August in a program aimed at streamlining production and reducing overall plant area to improve efficiencies. Further modernization work is now in the planning stage.

The heart of the new locomotive-production operation is the company's former general welding shop, an 1190-ft building in which Alco has created a progressive station, multi-line assembly system.

Plenty of Work—With the exception of diesel engines, fabrication of ready-to-operate units progresses in this building from steel plate to the completed locomotive. At the start of this year, Alco held enough orders to maintain full schedule production at least through Jan. 1, 1959.

Alco is the world's leading exporter of mainline diesel-electric locomotives.

Lab Setup — The new General Engineering Laboratories are housed in what was formerly a maintenance building. They include the radio-chemical laboratory for nuclear research, a thermal laboratory for study of heat-transfer characteristics, and instrumentation, chemical, mechanical, metallurgical, and welding laboratories.

The center contains a computation unit equipped with both digital and analog computers. According to Alco, centralization of the labs will allow the firm to increase the pace of its product diversification.

Warehouses Aim to Double Sales

Marketing Ideas Dominate Steel Warehouse Meeting

Many are in the red, but they weren't hanging crepe at their annual get-together.

Program featured merchandising and marketing techniques.

The goal: Double sales within 15 years.—By G. F. Sullivan.

▪ Chances are within the next 15 years you, and others in metalworking, will be buying twice as much steel from warehouses as you did last year. The American Steel Warehouse Assn. has set its sights on this goal—and past performance indicates they can make it.

Part of the drive will be built around new marketing and merchandising concepts. And there'll be more attention paid to costs. A warehouse with a good cost system may even ask some customers to change their ordering habits or buy elsewhere. You can expect more stress on service, some changes in product emphasis.

Plan for Future—Though quite a few are in the red, there was little crepe-hanging at the 49th annual meeting of the American Steel Warehouse Assn. last week in Las Vegas, Nev. Instead, R. G. Welch, executive vice president, put on a marketing and selling program that set a new high in member interest. Most members feel they are bumping along the bottom today. They've been through trouble before, and are planning confidently for the future.

Those plans hinge on marketing more than ever before. You can, for instance, expect a drive to convert some of your carbon steel applications to alloy. International Nickel is winding up a big market research project aimed at reversing the down-grading trend that marked the nickel shortage.

Emphasis, said L. R. Larson, Inco vice president and general sales manager, will be on the 4600 and 4300 series. You'll be hearing, for instance, how switching from carbon steel shafting to alloy will avoid machinery breakdowns due to abuse, habitual overloading or under-design. Reason for Inco's concern: In 1961 nickel capacity available to the United States will be 445 million lb, compared to 1957 consumption of 245 million lb. And nickel on the shelf, in the U. S. now totals 140 million lb.

Pinpoint Markets—The meeting heard Oliver Johnson, research director, The IRON AGE, explain how a company selling to metalworking can pinpoint its market, and provide positive information on prospects for the sales staff. He explained how census data is used to define and adjust sales territories, determine market potentials.

Mr. Johnson told the group how The IRON AGE 1957 Basic Marketing Data is arranged by state and industrial areas in two, three, and four-digit standard industrial classification codes. It shows the number of plant workers in each area, and number of plants in various size groups. And, he explained how to make an inexpensive market survey. Further refinement can come, he said, through use of The IRON AGE master list of some 27,000 individual plant listings which shows number of workers, location and departments operated.

An Example — Charles Ducommon and Richard Simpson, president and vice president respectively, of Ducommon Metals & Supply Co., told the ASWA members how Ducommon operates a market research and development program.

A second full session on selling ideas, provided more aggressive answers to such questions as "Why should you get a middleman's profit?" (Answer: We're not middlemen. We perform a service.)

Officers elected: F. J. Lovejoy, Wheelock, Lovejoy and Co., president; C. L. Hardy, chairman of the executive committee; vice presidents Lester Brion and G. L. Stewart; P. O. Grammer is treasurer.

New Concept—

R. G. WELCH, exec. vice president ASWA emphasizes marketing.

New President—

F. H. LOVEJOY, Wheelock, Lovejoy & Co., heads ASWA.

Warehouse Operates By Push Button

The automatic warehouse may be just around the corner.

Pesco Products Div. of Borg-Warner Corp. in Cleveland has just completed the prototype of a 50-000-sq ft warehouse that could be operated by one man, from a remote point if necessary.

Push Button Operation — With electronic processing equipment, it can be set up to run all day, filling orders from stocks; or it will work over night. In a steel warehouse, for instance, a clerk could simply push the right buttons for a variety of items and they would be delivered to the shipping dock automatically.

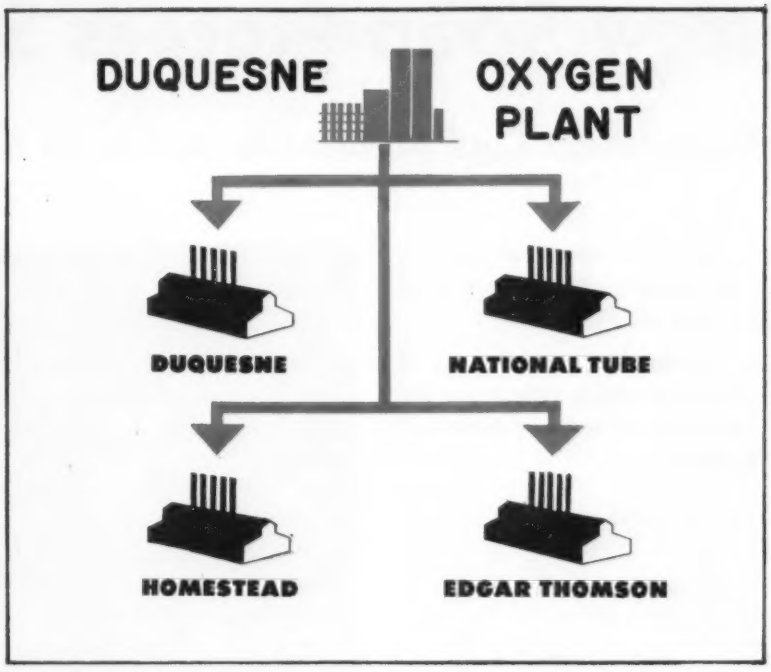
The warehouse will take any unit which will fit on a pallet, load it into racks and unload it when necessary in about two minutes. By using magnetic tape or punched cards, the warehouse can keep operating according to a schedule for more than a day.

Designed for Ford—The warehouse consists basically of a series of steel racks, arranged about four cells high and extending any practical length. It is loaded by an elevator-type mechanism which also travels on rails and positions longitudinally.

The prototype has been developed by the newly-formed Automatic Warehousing branch of Pesco Products. It is based on a design worked out for Ford Motor Co.'s Aircraft Div. in Chicago. Aircraft cutbacks postponed the contract.

Economic potential of the new system includes increasing effective volume of a warehouse, eliminating services necessary for a manned warehouse, and providing for speedy, automatic inventory.

Most likely candidates to order the first units are in the fields of major appliances or auto batteries where large unit loads are used in an all-reserve storage system. Ford sees its use in holding smaller parts, stampings and other palletable materials.



IN THE WORKS: Drawing shows U. S. Steel's proposed oxygen setup.

All-out on Oxygen

▪ The biggest on-site oxygen plant so far will be built by Linde Co. for four U. S. Steel plants near Pittsburgh.

Due for completion in February 1960, the new plant will have capacity for 1000 tons a day of high purity oxygen. This will be double the capacity of the largest previous plant for on-site generation.

Linde will own and operate the plant, which will be located at U. S. Steel's Duquesne works. Oxygen will travel by pipelines to Edgar Thomson works, Homestead, and National works. Provision has been made for future extension of the pipeline to a fifth location—Carrie Furnaces in Rankin.

What's Behind It?—No cost figures have been released, but it is estimated the oxygen plant will run in the neighborhood of $15 million. The size of the project stirred immediate speculation that U. S. Steel may be planning important new applications of oxygen in steelmaking processes.

The Corporation says only that the oxygen will be for general plant use. However, two points suggest extensive metallurgical application. For one thing the plant will have annual capacity of more than 8 million cu ft. Applied to the ingot tonnage of the four mills, this amounts to about 1000 cu ft per ton of steel at full production.

Dollars and Cents—According to Linde, the average steel mill now uses 200 cu ft of oxygen per ingot ton. Even allowing for scarfing, cutting, and other general applications, the four mills will have enough oxygen available to more than double average steelmaking usage.

The new centralized system will have a production volume that is expected to give a high degree of efficiency. No figure has been given out on the price.

New Scrap Process Scores a Hit

Proler Plant Cuts Automobile Bodies to Shreds

Steel men who watched this new process at work are fired up over its possibilites.

Porcelainized scrap looms as a new source. It may mean the beginning of the end for No. 2 bundles.

▪ A workman at a Houston, Tex., scrap yard throws a lever and a conveyor loaded with old automobile bodies moves toward a line of machinery.

In a matter of minutes, the old auto bodies are chopped up, separated from nonferrous material, and emerge at the end of the line as small pieces of high-grade, high-density steel scrap. For many years auto bodies have been prepared for steel mills in the form of compressed bundles.

This new process undergoing tests at Proler Steel Corp. may turn out to be one of the most important developments in the history of scrap processing.

'PROLERIZED' STEEL: Pieces of bare metal which once were automobile bodies are examined by Sam Proler, president, Proler Steel Corp. His new process removes virtually all impurities from light scrap material.

Armco Signed Up — Among a group of steel men who witnessed the test runs was R. L. Gray, president of Armco Steel Corp., who described the Proler process as "the greatest contribution to the steel industry ever made by the suppliers of scrap." Armco's Sheffield Div. has contracted for the entire output of the Proler installation.

The Houston plant, which sprawls over a 35-acre site, is still being enlarged and modified. It is expectd to be in full operation within four to six weeks. Because patents are still pending, details of the process were not disclosed by Proler.

Secrets Revealed—But according to reliable sources, the process is basically a combination of a hydraulic press, a hammer mill, a magnetic separator, and a system of conveyors.

In operation, wheels, tires, and engine are first removed from the automobile body since they can be sold separately. The car is then loaded by crane onto a 15-ft wide conveyor made of heavy steel plates. It moves up an incline to a hydraulic press where the car body is compressed to about 8 ft square.

Machine Works Fast—This bundle is put under an adaptation of a 700 rpm hammer mill, similar to those used for pulverizing rock in mining operations. In about 15 seconds, the bundle is broken up into pieces roughly the size of a cigar box.

These pieces are fed onto another conveyor, where they pass under a magnetic separator. This operation sorts out the ferrous scrap from the glass, copper, wiring, upholstery, rubber, and other waste material.

Conveyor belts carry the materials to two huge hoppers. Out of one of them flows clean, shining steel fragments ready for melting. Out of the other comes a steady stream of rubbish and other undesirable material. The entire plant can be operated by one man.

No Smoke Nuisance—The new plant is said to eliminate the need for incinerators used to burn off combustible materials in auto bodies. Incinerator smoke has been a widespread problem for scrap yard operators and communities. Although Prolerized steel does undergo a form of heat treatment, no smoke is given off—"just a fine mist," the Prolers explain.

J. A. Street, manager of scrap purchases for Armco's Sheffield Div., calls the Proler process "a melter's dream."

Armco Tries It — Some of the scrap has already been shipped to Sheffield's Houston plant and to other Armco installations where tests are being run to develop fully the possibilities of the material. "It can be used in openhearth charges, in the cupola process, in electric furnaces, and in blast furnaces," Mr. Street says.

Opens New Source — "Presence of rubbish and adulterants in bundles has always been a headache for steelmakers," Mr. Street explains. ". . . In addition, it takes more time to melt them than is required with the same amount of small, loose material. All these disadvantages have been eliminated by this new plant."

The process also may make possible the economic recovery of scrap from appliances such as refrigerators, washers, and hot-water heaters which have not been used because of the problem of removing porcelain.

Family Affair—The four brothers who direct Proler Steel Corp. invested 15 months' work and over $1 million in bringing their idea to fulfillment. Sam Proler, president, who conceived the process, was aided in its design and construction by Izzie Proler, vice president and secretary-treasurer, and vice presidents Herman and Jackie Proler.

"Only between 75 and 80 pct of No. 2 bundled scrap is actually steel," Izzie Proler says. "The remaining 20 to 25 pct consists of impurities which go off as slag in the steelmaking process. We believe the percentage of steel yield from our product is probably in the nineties."

They anticipate they will have to draw scrap from a 500-mile radius to keep the plant in continuous operation. Rate of production is estimated at between 500 and 1000 tons of processed scrap per day. About 60 automobile bodies will make one carload of finished Prolerized steel.

Business Steps Up Sales Effort

■ The average American company this year will put a lot more effort into its sales and promotion, to get a smaller profit return.

The necessity of the hard sell in a recession period is emphasized in an American Management Assn. survey. Replies came from 688 company presidents, whose firms represent almost 5 million workers, or some 8.6 pct of the civilian nonfarm employment.

Sales Volume Steady—The firms expect to match or top 1957's sales volume this year and a majority expects to equal or exceed 1957's capital expansion.

The AMA survey was optimistic in most respects, as reflected in the accompanying table. But 57 pct expect to show less in profits this year in spite of the favorable sales outlook and increased sales and promotion effort.

Must Work Harder—The survey indicates that nearly all firms are convinced they will have to work harder this year to attain their anticipated total sales level.

A full 95.8 pct of the reporting companies will put more or the same effort into direct sales. At the same time, 80.5 pct of the companies will spend equal or greater amounts on advertising and sales promotion.

Other Measures—The need for new products and processes in increasingly competitive markets is indicated in that 93.4 pct of the companies will equal or step up their research and development this year.

Questioned about "additional measures you are taking to ensure a better 1958 than 1957," 128 company presidents replied they would emphasize these factors: Cost reduction; improved marketing or sales effort; better planning and organization; and accelerated research and development of new products.

They also cited harder work, better quality, expansion, and better customer service as methods they hope will make for a better 1958.

How Industry Fights Slump

1958 Versus 1957: Results of AMA Survey

	More or Same	Less	N. A.
Sales	52.5%	47.1%	0.4%
Capital Expansion	54.3%	44.2%	1.5%
Direct Sales Effort	95.8%	3.3%	0.9%
Advertising and Sales Promotion	80.5%	18.8%	0.7%
Research and Development	93.4%	5.4%	1.2%
Profits	42.5%	57.0%	0.5%

Discounting Checks Price Index

But Cost-of-Living Continues to Hit New Highs

Government shoppers are now seeking out discounts in reporting cost-of-living figures.

Discounting isn't enough to offset other increases. Many union pay rates are affected by the index.—By G. H. Baker.

▪ The government's gradual recognition of discount prices at the consumer level is slowing down the rise in the official cost-of-living index.

As discount prices spread into department stores and other established outlets, the government's samples of consumer prices tend to reflect more accurately today's general softness in household appliances and consumer goods of all descriptions.

Appliances Drop—From December, 1957, to March, 1958, the average price of appliances dropped 2 pct. This was a direct reflection of the fact that appliances and big-ticket items are now being discounted in nearly all stores.

After a long period of pretending that discount houses didn't exist, department stores are now beating the discount houses at their own game.

Despite these adjustments, the consumer price index has continued to rise in recent months, as indicated in the chart on this page. In contrast, household furnishings, which reflect appliance prices, have not climbed, and dropped significantly in recent months.

Affect Wages — These adjustments are of greatest importance to industries and union members tied to cost-of-living contracts, steel and automotive, for example.

Steel wages rise 1¢ per hour for every .4 or .5 of one point rise in the index, in alternate sequence at semi-annual periods.

Still Climbing—More and more, it's beginning to look like next month's index will show a new high. Food prices continue to rise, and will continue to climb until seasonal crops begin to come in.

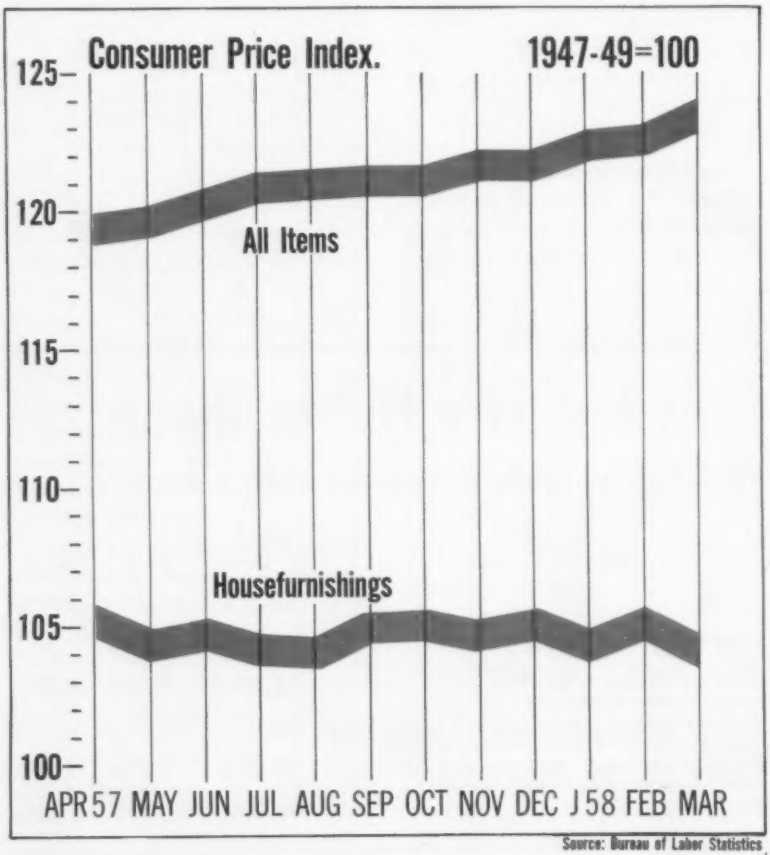
The downward movement of appliance price statistics followed abandonment of fair trade prices earlier this year, and it did have the effect of eliminating some of the upward pressure.

Sharp Shoppers — Government shoppers, upon whose reports the index is based, do not, as a rule, shop in discount houses. When fair trade collapsed, department stores undertook their own pricing. New prices are generally lower than old fair trade prices, and pulled down the index.

But government shoppers are careful to point out that they do not accept automobile list prices in determining selling prices of new cars.

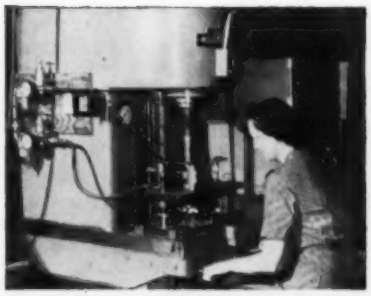
"Maybe we didn't accept the discount prices early enough," one Labor Dept. economist says. "But the consumer price index today definitely includes price discounts offered by department stores."

Discounts Help Restrain C-O-L

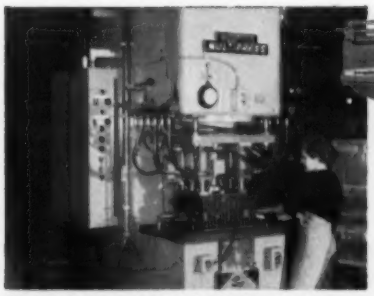


Source: Bureau of Labor Statistics

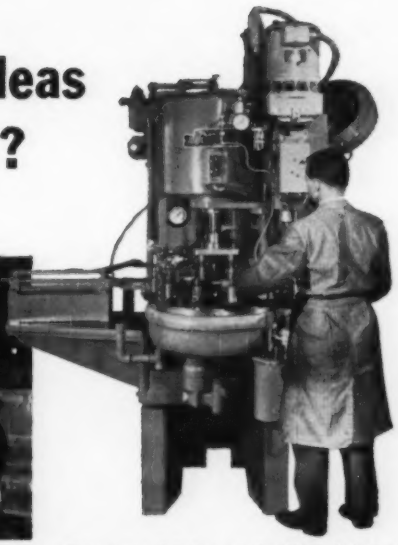
Which of these MULTIPRESS ideas will save you money...NOW?



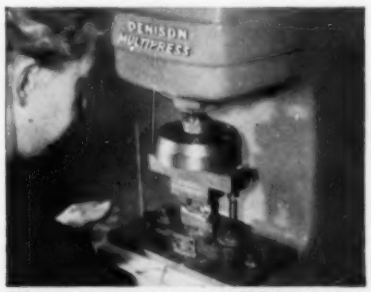
Toy maker forms 1000 parts per hour . . . 8-ton Multipress forms metal toys faster, at less cost for Mattel, Inc.



Motorola speeds production...with 100-ton Multipress that precision-punches up to 450 holes at a time in plastic TV chassis bases.



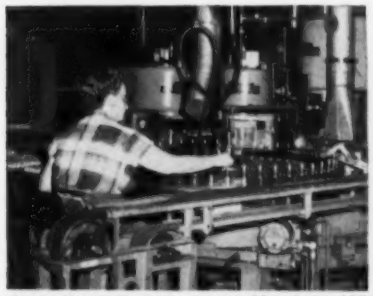
Dormeyer triples production of food mixer parts . . . cuts scrap loss, too, with 8-ton Denison Multipress—12-station index table.



Waterman boosts output 800% with 1-ton Multipress that "angles" precision C/C pen parts fast, at low cost.

Cuts cost 73% on sub-assembly of specialty products at George S. Thompson Corp with 4-ton Multipress. Savings—11¢ per unit.

Prints Electronic circuits 3 times as fast at Barry Process Co. with 4-ton Multipress. Controlled timing and pressure assure uniform carbon ink deposit on each printed resistor.



Auto-lite automates assembly of over 150 different types of spark plugs with a battery of 3 Multipresses operating around a 48-station index table.

Production up 33% at Cleveland Graphite Bronze—where 25-ton Multipress compresses soft carbon cores at the rate of 100 per hour.

Trimming rubber flash twice as fast... 4-ton Multipress with 6-station index table trims flash from 2400 molded rubber parts per hour. Old method called for 3 operations.

Time and money savings like these are only a few of hundreds that Denison Multipress can help you make in keeping ahead of competition today.

But modern competition means more than simply faster production. That's why *Multipress plus-benefits* are so *important.*

Multipress on your job can mean larger tool and die life . . . less scrap . . . higher product quality . . . minimum maintenance . . . extra operator safety. *Multipress can give you the competitive edge.*

Isn't it time *you* looked into Multipress? Your Denison Hydraulic Specialist can show you where and how Multipress will pay off best on your next job.

TOOLING AND PRODUCTION MEN! WRITE FOR YOUR COPY of the new DENISON MULTIPRESS all-line catalog 120-D. Specifications and application data for all-industry uses. Multipress 1 to 75-ton capacities.

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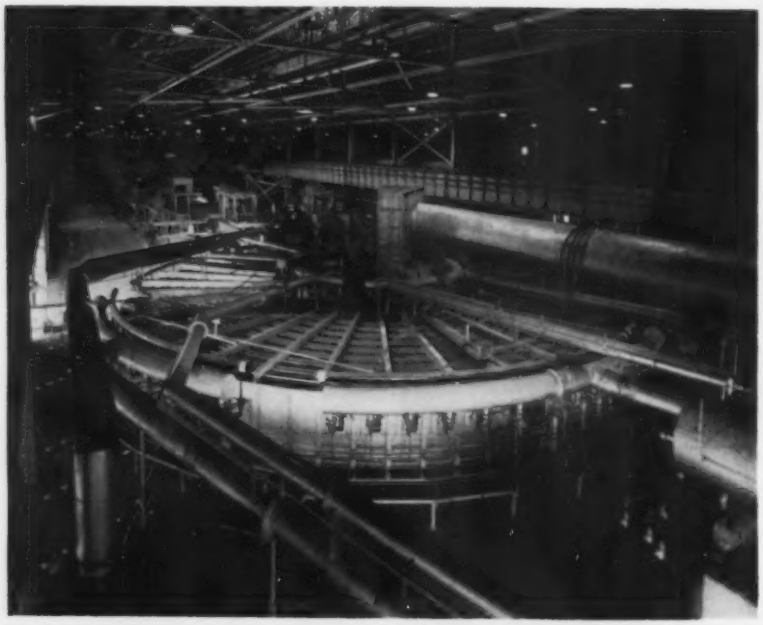

FURNACE: Youngstown Sheet and Tube Co. says this rotary furnace at its No. 3 seamless pipe mill, Indiana Harbor Works, has the largest hearth of any furnace of its kind. It will heat 190 steel billets per hour, in six heating zones, on either coke oven gas or oil.

Easier for Schools To Get Tools

Washington is writing some new rules to make it easier for schools to get surplus machine tools. The object: To ease two of the major impediments.

Schools get the machines free. But they must wait through a 90-day screening period after a tool has been declared surplus. This is too long, they say.

Too Late—Also, selections are made from a government list. But often when the schools try to pick up the machines, they find that a government agency with a higher priority has beaten them to it. The schools say lists should be kept more current.

Actually the government is willing to go all out to smooth over the trouble. Not only do the tools help educate budding machinists, but storage and warehousing of older tools is becoming a burden.

Ore for Sale

General Services Administration will offer for sale about 300,000 long tons of government-owned, low grade, Mexican manganese ore.

Current plans call for sale on the basis of "where is, as is, all or none," or "outloaded weights and analysis, all or none."

The ore is located at El Paso, Tex., and averages 30.47 pct manganese. Offers should be made to GSA, Defense Materials Service, 7th & D Sts., S.W., Washington 25.

First Full-Scale HEF Plant

The Free World's first plant making both liquid and solid high energy fuels on a full production basis is operating near Niagara Falls, N. Y.

It was built by Olin Mathieson Chemical Corp. for the U. S. Navy, at a cost of about $4.5 million. The plant will make high energy fuels for the Air Force as well as the Navy.

Development Work — The Air Force is building a new $45 million plant on adjacent site.

The plant's product is a boron-based fuel expected to boost both the range and speed of military aircraft and missiles. Current output is being used by both services for further development work.

Dr. L. Kermit Herndon, vice president and head of OM's high energy fuels div., says the price of the new fuels is still classified. But recent development work is known to have cut costs sharply.

Atomic Destroyer Prototype Rushed

Building of the land-based prototype for the engine of the first U. S. Navy atomic destroyer is to be speeded by a new law.

A total of $35 million is authorized by the law to meet costs of the work. Of this sum, more than $27.3 million is to go into the nuclear reactor. More than $3.8 million will be used for buildings, hull structure, and other facilities at West Milton, N. Y., the project site. The remaining $3.7 million is for a contingency fund.

Passage of the law amends the current year act authorizing funds for the Atomic Energy Commission. It is expected to permit savings of some six months in constructing the prototype by allowing orders to be placed without delay.

Sheffield Rod Mill

Work has begun on a new $10 million rod mill at Kansas City, Mo., for Sheffield Div., Armco Steel Corp. General Contractor is The Rust Engineering Co., Pittsburgh.

The project is designed to be one of the fastest 10-in. rod mills in the world, with a speed of 6000 fpm on rods, and a production rate of 80 to 90 tons per hour on bar products.

"Pure electrolytic manganese makes my melting simpler"

When melting quality steels or non-ferrous alloys, your melting practice is greatly simplified by using ELECTROMET electrolytic manganese—99.95 per cent pure. You can easily control carbon, phosphorus, and silicon because electrolytic manganese contains less than 100 parts per million of these elements. This is particularly helpful when producing:

• Chromium-nickel stainless steels, especially the chromium-nickel-manganese and extra-low carbon grades. • Low-carbon deep-drawing sheet steels. • High-temperature, non-ferrous, and electrical resistance alloys.

For adding nitrogen and manganese together, 4½ and 6 per cent nitrogen-bearing grades are available. These grades are especially useful when producing free-machining and low-carbon sheet steels. For details, contact your ELECTROMET representative.

ELECTRO METALLURGICAL COMPANY, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, N. Y.

The thick plate of ELECTROMET electrolytic manganese penetrates the slag and goes into solution rapidly.

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PLAN WITH SAVE WITH RELY ON COPPER

Plan with Copper – because it has distinctive qualities you'll find in no other metal. For example, air conditioning engineers plan with Copper because it is the best commercial heat transfer agent known . . . and because it resists corrosion. Copper also enables them to get the most efficient installation in the smallest possible space.

Save with Copper – as Lennox Industries, Inc. does. Its "Landmark combination of comfort components" heats, cools and cleans air . . . and Copper helps to do it more economically. Copper is easy to work, bend and solder, thus making assembly, handling and installation quicker, surer, easier and less costly.

Rely on Copper – whether it's cooling, heating or whatever your problem. *Think first of Copper's unique advantages!* Not only is it the best commercial heat transfer agent, not only does it resist corrosion . . . Copper is the best commercial conductor of electricity. Copper and its alloys are easy to work, form, draw, join, stamp, polish and plate. And Copper is in good supply to meet your demands today and tomorrow!

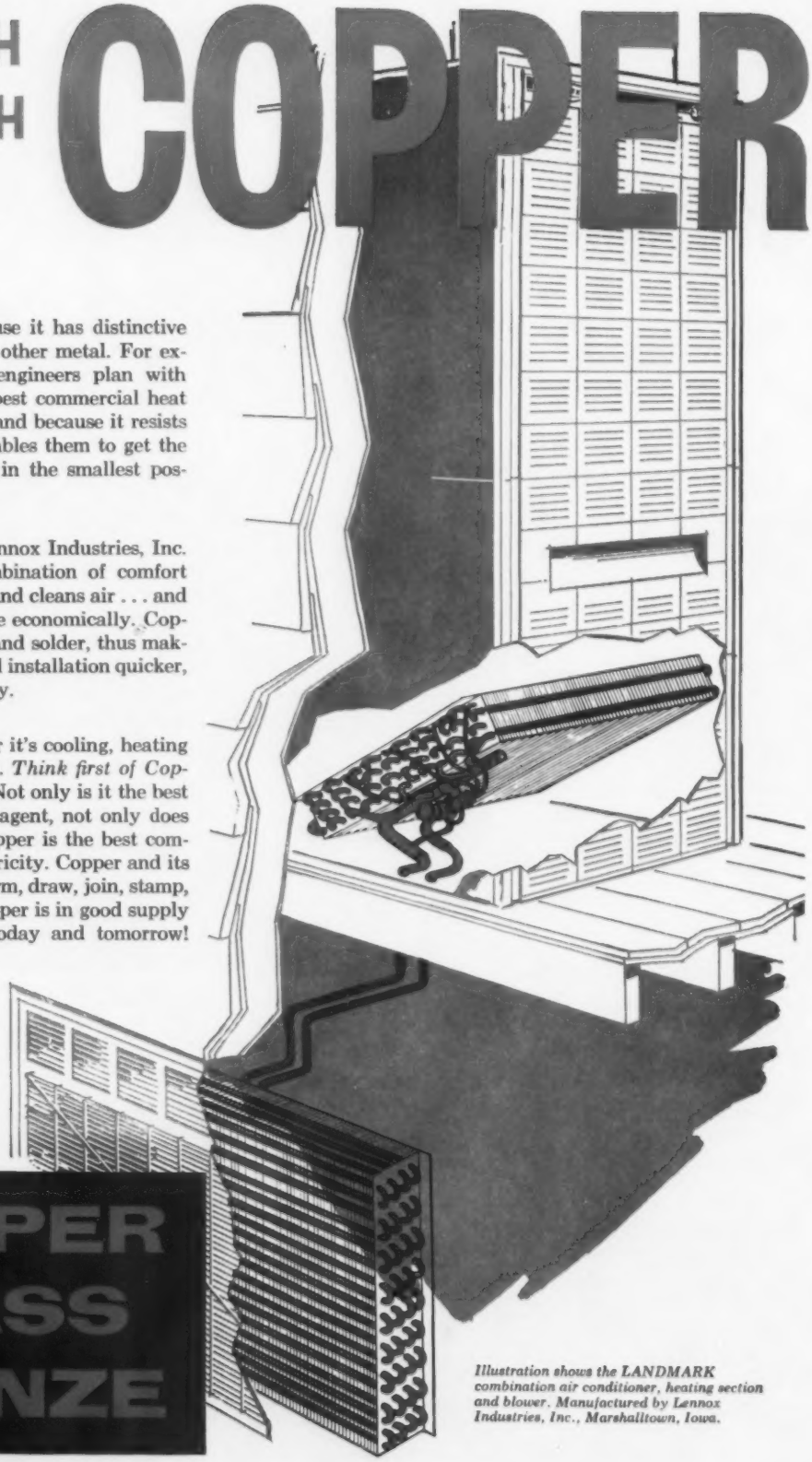

Illustration shows the LANDMARK combination air conditioner, heating section and blower. Manufactured by Lennox Industries, Inc., Marshalltown, Iowa.

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In over 40 Standard Alloys!

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Lloyd A. Dixon

An Expert Looks at Management

For more than 10 years Mr. Dixon has been revamping operations of companies acquired by Rockwell Mfg. Co.

He has developed some sound ideas on how a company should be managed.

▪ Internal anchorman for Rockwell Manufacturing Co.'s growing network of companies is strong-faced, solidly built Lloyd A. Dixon, executive vice president.

During the past 10 years, Rockwell's assets and sales have doubled. The company now owns 20 plants in the U. S., Canada, and Europe.

The company feels the current recession offers a good chance for bargain acquisitions. It is frankly shopping for plants. And providing the day-to-day decisions that have helped make integration a smooth process is Mr. Dixon.

Minimum Interference — "We don't go into a newly acquired company with the idea of cleaning house," he says. "We don't have the excess management talent to do this even if we wanted to. More and more, we are looking for companies that have able management teams."

In basic management matters, acquired companies exercise a high degree of autonomy, Mr. Dixon explains. Capital expenditures over $5000 must be approved by central headquarters. Otherwise the local group runs its own show to a large extent.

Two Forces — In this kind of free-wheeling decentralization, Rockwell has two strong forces working toward unity. One is Mr. Dixon's personal leadership. "He's the kind of man people instinctively imitate," an associate says.

LLOYD A. DIXON: Need is urgent for young men in management.

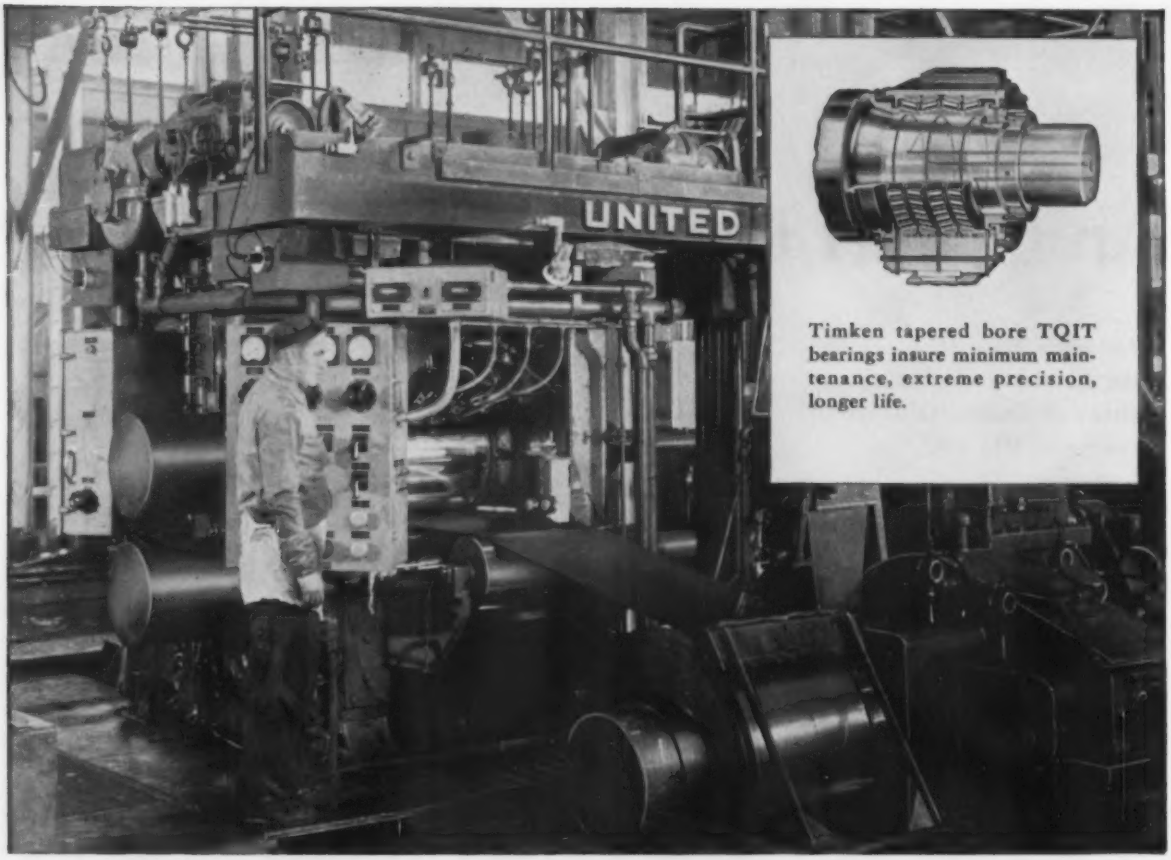
The other force is Rockwell's management development program which tends to draw field forces into the central scheme. A good part of this is communications.

Young Men Needed—"We tell junior executives things that many companies regard as confidential," says Mr. Dixon, "We expose our people to the overall figures of management."

He feels there is urgent need throughout industry to start younger men thinking in broad management terms. He notes a lagging in management drives among young men.

His Training—Mr. Dixon himself developed his own management drive the hard way. He left high school in 1913, at the age of 14, for a job as office boy at a Canton, O., plant. Then came jobs in other companies as timekeeper, cost accountant, and assistant production manager at a Cleveland axle company.

He got his business and engineering education in night schools and through correspondence courses. His big break came in 1926 when Col. Willard F. Rockwell, now board chairman of Rockwell Mfg., became president of Equitable Meter Co. and named young Dixon as his assistant.



Timken tapered bore TQIT bearings insure minimum maintenance, extreme precision, longer life.

2-High temper pass mill starts faster runs smoother on TIMKEN® TQIT bearings

THIS 2-high temper pass mill, built by United Engineering and Foundry for Alan Wood Steel Company, uses tapered roller bearings of the TQIT type, designed and developed by The Timken Roller Bearing Company.

Higher mill speeds are possible with Timken® bearings. They reduce starting resistance. That's because Timken bearings practically eliminate friction. Their geometric design gives them true rolling motion. Precision manufacture makes them live up to their design. All this makes for smoother, more dependable operation.

Timken tapered bore bearings combine interference fit with easy removal. They can be removed from the roll neck by expanding the cones hydraulically. Excessive scuffing and neck wear are eliminated. Greater stability between cones and roll neck distributes the load within the bearing. Improved fillets and larger necks are possible. This means you get the lowest possible neck stress and deflection.

Lubricant costs are cut because Timken bearings use economical grease lubrication. No lubricant is lost during roll changes. And rolls can be changed faster because there are no tubes or pipes. The tapered design of Timken bearings lets them take radial and thrust loads in any combination—no need for special thrust bearings that increase costs and complicate designs.

Be sure you get all the advantages of Timken TQIT bearings in the machines you buy or build. For more information call or write The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.

TIMKEN

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TAPERED ROLLER BEARINGS ROLL THE LOAD

Why Downturn Was Hard to Spot

Hindsight shows a conflict of forces that obscured the beginning of the real downturn.

First quarter figures show extent of the business drop. Little improvement is indicated for second quarter.

▪ Looking back over some of the statistics that chart business progress, it's easy to see how so many business executives failed to spot the impending depression.

The principal reason why even the best informed missed the beginning of the downtrend is the combination of conflicting forces. While some of the major business factors started to slip early in the year, others were still climbing aggressively.

Remember the Plateau — The result was the effect of a "plateau" or sideways movement that was observed a year ago. Most business optimists hoped for a major upsurge in spending for consumer durables before the end of the year. When that failed to materialize, the recession was really on.

Spending for consumer durables never really reached a high point last year. Spending hit the annual level of $35.9 billion in the first quarter, dropped off slightly until a sharp collapse in the fourth quarter brought on the present deflated condition.

Bottom Fell Out — Meanwhile, gross private domestic investment, which includes construction and capital spending, continued its climb through the third quarter. This dropped from $66.5 billion annual rate in the third quarter to $61.3 billion in the fourth. Then, the disastrous first quarter of this year resulted in a level of only $51.8 billion. And it's still dropping.

Inventory control resulted in a $2.7 billion drop in inventories in the fourth quarter, and really got going with a $9 billion decline in the first quarter, in annual rates.

Still Spending—Personal spending has remained high, in spite of the severe decline in durables.

All in all, Gross National Product was at an annual rate of $422 billion in the first quarter of this year, down $10.5 billion or 2.5 pct from the last quarter of 1957, according to the Office of Business Economics, Dept. of Commerce. Compared with the peak reached last summer, GNP was down 4 pct.

. . . First Quarter Indicators

Interpreting first quarter developments, the OBE makes these observations:

Personal Spending—At a $281 billion annual rate, this held within $1 billion of the fourth quarter in spite of a $3 billion drop in auto buying. Consumer demand remained firm in other lines, reflecting a continued level of disposable income not far below last year.

Inventory Liquidation—Reaching an annual rate of $9 billion in the first quarter, this is one of the major reasons for the recession. By industry, liquidation was most noticeable in machinery, transportation equipment, and fabricated metals.

Fixed Investment — This is off about $3 billion at the annual rate, or about 6 pct. Most of the drop is reflected in a decline in plant and equipment spending.

Government Purchases—This is one of the few categories to move up. Federal spending held at about the fourth quarter rate, as a result of a check in cutbacks for defense spending. Some acceleration in letting of contracts was noted. State and local buying rose $500 million.

Corporate Profits — Measured before taxes for national income purposes, profits dropped from $41 billion in the third quarter to $36.5 billion in the fourth quarter. Although not compiled for the first quarter, an even greater drop is indicated.

Personal Income—Here a drop of $3 billion was registered in the annual rate between fourth and first quarters. This is $4.5 billion below last summer's high.

Private payrolls were off $4.5 billion in the quarterly interval, but unemployment benefits and other government payments rose to an annual rate of $22.5 billion in the first quarter, up $1 billion from the last quarter of 1957.

FRB Index Reaches '54 Levels

An even more up-to-date and timely indicator, the Federal Reserve Board's index of industrial production dropped another two points in March to 126. (1947-49 = 100)

This is the lowest point since October, 1954. The bottom of the '54 recession was 123 in July and August.

High point was 146 in February of last year and a year ago it was 144.

AUTOMOTIVE

GM Heads for Annual Retooling

Switch in Policy Puts Pressure on Other Automakers

General Motors has held tenaciously to a doctrine of design through evolution.

Now it plans to make major body changes in all lines in one year.—By H. R. Neal.

▪ General Motors' switch to a single body-shell concept could be the start of a revolution in designing and manufacturing of the Big Three's annual transportation packages. GM's changeover begins with its 1959 models, to be introduced about October.

From now on, all GM cars will share the same basic body. Until this year, the auto giant's products have been built around three body shells. Chevrolet and Pontiac have shared the smallest "A" body. Oldsmobile and most of the Buick line shared the larger "B" body. Cadillac and the top Buicks shared the big "C" body.

Upheaval in Tooling—In itself, the program is not unique. Chrysler Corp. introduced the idea of having a single body to do the work of several with its 1957 models. Plymouth, Dodge, DeSoto, and Chrysler are cousins under the sheetmetal. Imperial retains a separate body.

But the big upheaval will come in the form of faster amortization of tooling costs and more frequent model changeovers. Neither Ford nor Chrysler is willing, or prepared, to be a party to this kind of revolution.

Annual Change Possible — Past practice in the auto industry has been to amortize two-thirds of the tooling costs in the first year, the remaining third in the next. Because of tremendous costs involved in a body change, GM staggered its body tooling programs — "B" and "C" bodies one year, and "A" the year following. Now, with the cost reduced it can—and is—tooling the entire line in a single year.

Because of its volume, GM can also charge off the cost in the same model year. And it can afford to retool a complete change the following year—and each year thereafter. With the same program, but much smaller volume, Chrysler must still take at least two years to amortize its tools, and prefers three years.

Ford's Position—It would be safe to say Ford isn't any too happy over the GM move. Bodies for Ford's cars are nearly as many as the company has makes. But, Ford, too, is expected to increase body parts interchangeability as far as it is able.

Shifting to a single body shell, however, is still out of the question at Ford. It is limited by the fact Lincoln and Thunderbird employ unitized construction. The other three lines, Mercury, Edsel and Ford use conventional frame and body construction. Ford is consider-

Bucking the Foreign Car Trend

RAMBLERS FOR SWEDEN: While European small cars pour into the U. S. in growing numbers, a shipment of new Ramblers leave port of Baltimore bound for Stockholm. The cars were shipped from AMC plant, Kenosha, Wis.

ECONOMIC FACTS ON FASTENERS

CORRECT FASTENER SELECTION AVOIDS COST PENALTY

- **A fastener survey can reveal many opportunities for savings**
- **Cut costs without cutting strength or safety of connection**

It's a mistake to pay premium prices for fastener properties you neither need nor use. While costly alloys have their place, most times the three grades of steel used in standard bolts and nuts can do the job and save money.

Example: Specification calls for alloy bolts with strength of 145,000 psi. But in assembly, they're tightened to just 30,000 psi. This gives no more strength to the joint than a *far more economical* Bright Cap Screw tightened to same load. The change would save a substantial sum.

Reducing size also saves. Remember that a fastener's job is to hold an assembly together. *Holding power* is what you should buy, rather than size or number of pieces.

Example: Product requires fasteners with a safe load capacity of 20,000 pounds. Bright cap screws of ¾ inch size will do it; but so will ⅝ inch High Tensile Bolts—*at less cost.* Actually, to get the same holding power as in $1.00 worth of the high tensile fasteners, you would need $1.50 worth of bright cap screws.

All this just touches on a valuable story for any manufacturer using standard fasteners. Worth a call to hear what it holds for *you?* Contact Russell, Burdsall & Ward Bolt and Nut Company, Port Chester, New York.

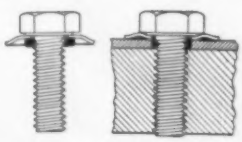
Plants at: Port Chester, N. Y.; Coraopolis, Pa.; Rock Falls, Ill.; Los Angeles, Calif. **Additional sales offices at:** Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas; San Francisco. **Sales agents at:** Milwaukee; New Orleans; Denver; Fargo. **Distributors from coast to coast.**

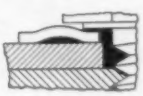
SPIN-SEAL* screws give leakproof fastening

for flat or curved sheet materials

Here is a new type of composite fastener that seals by means of a unique flow-in sealant and washer.†

Concave in shape, the heat treated springy washer confines and controls the flow of sealing compound. Tightening the screw forces sealant into various spaces around (1) threads, (2) head, and (3) clearance hole to give hermetic sealing.





When screw is tightened the compound seals clearance hole and top thread; between washer and surface; between head and washer.

The washer has ability to conform to curved surfaces and still seal securely against hydrostatic pressures and wind driven water.

ONLY THE SCREW TURNS

Washer does not turn with the screw. This prevents twisting or tearing the sealing "gasket", marring of polished surfaces, or gouging of painted finishes.

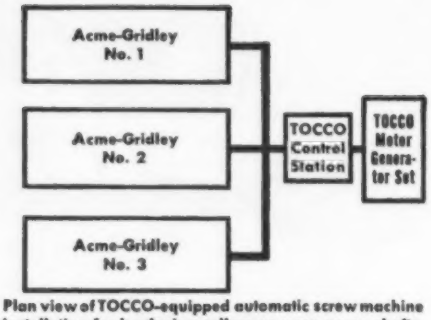
The flow-in gasketing compound is plastic rather than elastic. Stable and non aging, it won't split or ozone-check under pressure. It gives controlled flow into clearance spaces. Compounds are available to seal out water or oil.

Send for Bulletin SS-1A. *T.M.

†U. S. & Can. Pats. Pend.

RB&W FASTENERS—STRONG POINT OF ANY ASSEMBLY

Pump Shafts Machined and Hardened in ONE operation...



Plan view of TOCCO-equipped automatic screw machine installation for hardening collars on vane pump shafts.

with TOCCO Induction Heating*

TOCCO-equipped 8-spindle Acme-Gridley Screw Machines at a large automotive manufacturer's plant produce vane pump shafts for power steering units in one completely automatic operation! The hardening and metal-working operations are combined on the same machine.* No additional handling—no hardening cost except power!

A TOCCO inductor, mounted at one station of each automatic, hardens collars on pump shafts after they have been completely machined at preceding stations on the same machine. Each installation consists of 3 automatic machines equipped with inductor coils powered by a 50 KW, 10,000 cycle TOCCO unit. Production from each installation is 360 shafts per hr.

Shafts are made of C 1144 and only the collar is hardened to prevent scoring the seal. TOCCO's rapid heating confines the hardened area to the surface of the collar leaving the rest of the shaft unaffected.

If your products or their components require heat treating, soldering, brazing or heating for forging, it will pay you to investigate TOCCO for better, faster production at lower unit costs.

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Please send copy of "Typical Results of TOCCO Induction Hardening and Heat Treating."

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Automotive Production

WEEK ENDING	CARS	TRUCKS
May 17, 1958	86,738	16,645
May 10, 1958	78,506	17,438
May 18, 1957	127,390	23,123
May 11, 1957	125,924	23,198
TO DATE 1958	1,752,300	343,200
TO DATE 1957	2,663,700	444,500

*Preliminary Source: Ward's Reports

ing scrapping of unitized construction, permitting a single body shell program, but not before 1960 models.

A Break For Chevy—By all odds, the GM car that stands to gain the most from the one body program is Chevrolet. After leading Ford in sales for more than 20 years, Chevy lost the 1957 sales battle. Ford had introduced a completely new car while GM's volume car was riding downhill with another facelift.

With a new car this year, and Ford with the facelift, Chevy has returned to the top. And its sales aren't trailing 1957 by nearly so much as the industry average. This adds further to the belief that in order to stay at the top of the heap an automaker must bring out a completely new car every year—and not just a facelift.

Hard Work Ahead—Support for the theory an annual change is necessary to maintain sales recently came—not from GM, but from a Chrysler executive. About a month ago, vice president E. C. Quinn forecast the automobile industry will continue to grow and that its growth will rest on the ability of engineers to produce "dramatic yearly advancements" in automobiles.

"Continuous change, development and improvement have been the reasons back of the phenomenal growth of this automobile business. About the only thing that could threaten its progress in the future would be failure to work just as hard and continuously to make dramatic yearly advancements over the best we have today," he said.

GM Holds Trump — While it might be expected Cadillac will suffer a drop in prestige from sharing a body with Chevrolet, this needn't be the case. One report says Fisher Body will use 26 to 30 different stampings; changing only 11 of these will produce car bodies that appear considerably different.

As yet, it isn't clear whether GM's move to a single body means the company plans a new body every year. However, it does give GM the "option" of producing "dramatic yearly advancements" at a much lower cost.

Diemakers' Outlook—Ford and Chrysler are not the only ones concerned about GM's action. There has been a trend in recent years for automobile companies to do a larger share of their own die work, and to manufacture more of their own parts. In the past several years GM has expanded its die making facilities, and now this is worrying tool and die shops.

Traditionally, the die shops say, GM has done about 50 pct of its business with outside vendors; the remainder is done in its own plants. Tool and die shop owners are not sure that ratio will hold.

Stability May Come — Capacity of independent job shops is greater than the available work. This situation has come about partly through expansion programs, but just as significantly through the disappearance of independent automobile companies. Firms such as Hudson, Packard and Kaiser-Frazer farmed out a greater percentage of their tool and die work than do members of the Big Three. That business is gone.

An annual major model change by the automobile industry could bring stability to the feast and famine tool and die shops.

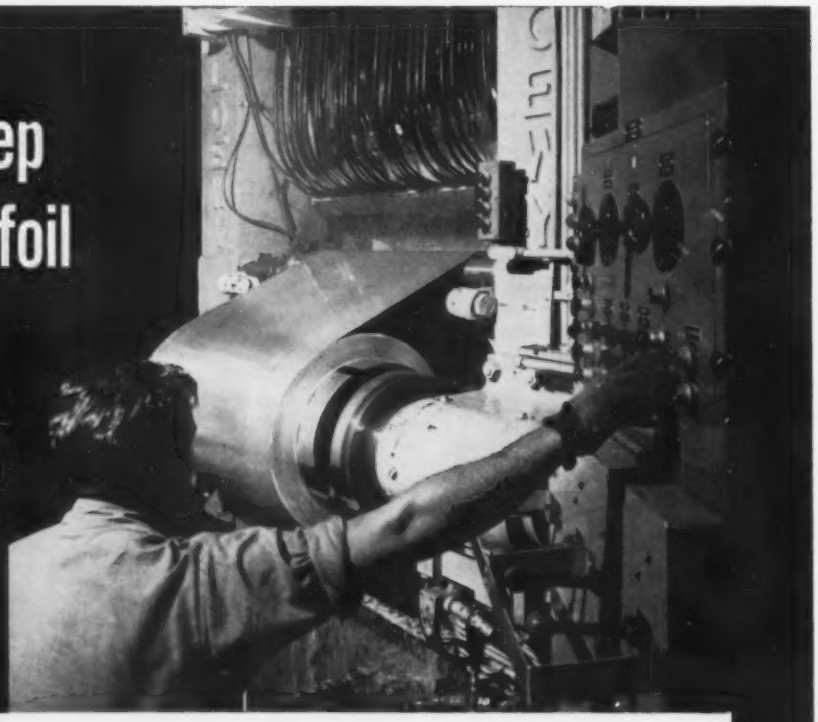
Captive Shop Threat—Job shops could operate at a steady pace. Some shop owners believe ultimate cost of tooling could be reduced.

But they are also worried that GM, and eventually the other automakers, will continue to increase their own capacity to do the job. GM might decide it has enough continuing work to support complete captive die shops.

THE BULL OF THE WOODS

how to keep aluminum foil from shattering

... at 35 miles per hour!



Kaiser Aluminum & Chemical Corp. increased annual production of aluminum foil 50% at its Permanente, California plant through installation of a four high foil mill. This mill reduces aluminum strip in thickness from .026 to .00025 of an inch at speeds up to 3000 fpm.

At 35 miles per hour, excessive strain at any of the several reduction stages would shatter the extremely thin foil. From the original payoff reel through to the final rewind, uniform tension is provided by Reliance V★S Drives.

Reliance engineers designed this drive specifically for this mill, to provide the constant uniform tension which is so important.

This application is typical of the many diversified jobs that Reliance V★S Drives are called upon to perform. There is a Reliance V★S Drive to fit your application.

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For further details, write Dept. 25A, or call!

Main control room—Where Reliance equipment provides more than 2,900 hp. to drive this mill.

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Anti-Merger Pressure Relaxes

But Bills Are Still on the Move in Congress

Feeling grows that too tough anti-merger legislation could hurt more than it would help.

Legislation isn't dead, however. A bill is already out of a House Committee, ready for floor debate.—By G. H. Baker.

▪ Congress has cooled off considerably on plans to prohibit mergers. Many business firms have written to Senate and House members, explaining that an antimerger law, if enacted, could bring on economic ruin to shaky firms.

Thus, an antimerger law, while written to stop or at least slow up the declining number of firms in many industries, might actually have the opposite effect.

Out of Committee — In the House, antimerger legislation has received committee approval and is awaiting debate and final vote in the floor of the House. In the Senate, members of an antitrust subcommittee are putting the final touches on similar legislation.

Although some of the details are still unsettled, here's how an antimerger law would work:

The Points — Firms wishing to merge would first have to notify the Federal government if their combined capital is more than $10 million. The government would then be empowered to seek a court injunction to hold up the merger while a study was made. At the end of the waiting period—60 or 90 days—the government would give a yes or no answer to the proposed merger.

The rate of mergers has slowed somewhat in recent months, thus removing some of the demands for quick action that were presented in the congressional hearing rooms last year.

Space Agency Coming

Congressional leaders are predicting that a powerful new civilian space agency will be established this year.

The new agency, requested by President Eisenhower, would absorb the present National Advisory Committee for Aeronautics and become the government's principal air and space research and policy-setting body.

It will, congressional sources say, be as strong as the Atomic Energy Commission and have precedent-setting powers.

Military leaders have expressed grave doubts about the power of the proposed agency to oversee with iron control all scientific exploration of space. Civilian scientists have generally endorsed the proposal.

House Democratic Leader John W. McCormack, of Mass., head of the special House Space Committee, is predicting quick passage of legislation setting up the new agency in the lower chamber.

Excess Profits Again?

Revival of the old war-time excess profits tax on defense industries is being urged by some liberal Democrats in Congress.

Sen. Richard L. Neuberger, D., Ore., says the excess profits tax on defense contractors is needed to reduce the "unjustified" high costs of military items and to even out profits for various firms.

Unions Swing Into Political Action

COPE's Plan—Unions are mapping a new political drive.

Labor leaders are making personal calls at local union levels in a new push to elect labor's "friends" at the polls this November.

Eight three-day meetings are being held in different areas under the auspices of the AFL-CIO Committee on Political Education (COPE), the political department of the national AFL-CIO organization.

Few Republicans—In almost all cases, the candidates COPE wants elected are Democrats. Republicans are endorsed only in a handful of districts where election of a Democrat is highly unlikely.

The labor leaders have thus far made calls in Louisville and Atlanta. Between now and the end of June, they'll call in Boston, Philadelphia, San Francisco, Denver, Oklahoma City and Chicago.

Can Use Dues—Until recently, labor unions were barred by law from using money collected in union dues to pay the bills of political candidates. But the Supreme Court in a test case ruled that Walter Reuther had properly used dues money to buy TV commercials which urged the election of Democrats.

So the old union slogan, "Give A Buck To Cope," no longer has much urgency about it. It's now proper to take dues money for the campaign purposes, so long as it's listed as expenses for the "education" of the rank and file.

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You also contribute to plant safety when you use RUST VETO M.P. When mixed with water, it is non-inflammable. And it effectively replaces flammable slushes; you need no longer keep dangerous solvents in open tanks or in storage.

And don't forget about economy. You buy just RUST VETO M.P. That's all you need, except for a few gallons of water.

Your Houghton Man will be glad to demonstrate ease of use and effectiveness. Why not ask him to, the next time he calls. Or, write E. F. Houghton & Co., 303 W. Lehigh Ave., Phila. 33, Pa.

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Drivers Out to Set "500" Record

Look for New Speed Mark in Annual Auto Race

Fifty-six cars, including many from Farwest, will compete for starting spots in Indianapolis race.

One West Coast entry discards front axle for a torsion bar suspension. Aim is improved steering.—By R. R. Kay.

▪ This year's Indianapolis Speedway Race on May 30th may be the fastest in history.

Everything is all revved up for another speed jamboree. It will take a 141 mph average qualifying speed to get one of the 33 starting positions. Fifty-six cars will battle it out to qualify.

Barring accidents, and with favorable track conditions, speed for the race should average 136.5 mph—a new high.

Few Design Changes — Again, cars and engines designed and built in California will dominate. Speed equipment is a multi-million-dollar manufacturing industry on the Coast.

There are hardly any radical engineering changes in this year's entries. And once again, the rugged, reliable four-cylinder Meyer & Drake 255-cu-in. Offenhauser engine will power most of the cars.

How about foreign car entries? As usual, in spite of rumors, none will show up.

Faster Turning Wanted—Can a race engine lie on its side and win the Indianapolis "500"? Last year's winner, the Belond Exhaust Special, proved it can. And this year five cars are making a try at it.

Race car designers always strive for increased corner speeds to step up the driver's average speed with greater safety, and better stability. A fraction of a second saved per turn means much because there are 800 left-hand turns in this annual thriller. Straightaway speeds have stayed about the same for many years. But corner speeds have soared.

Nothing really new has showed up at the Speedway in a long time. But this year Frank Kurtis, Glendale, Calif. designer, whose cars will take some 23 of the 33 starting positions, is trying something new.

Axle Absent—Keep your eyes on the D-A Lubricant Special. It has no front axle. Kurtis designed a new independent trailing arm torsion bar suspension. He believes it will give truer steering geometry for greater stability. It should permit the left front wheel to hug the ground around curves for longer tire life, easier steering, and smoother handling.

Kurtis believes this type of suspension could also give passenger cars an easier ride. Installation would be simpler than with the conventional system. And there would be more freedom in engine placement.

New Breather Installed on Former Winner

TWO IN A ROW? Belond Exhaust Special, victor in 1957 Indianapolis race, will try again this year with a new crankcase breather. It's pointed out by designer George Salih to Sandy Belond and Jimmy Bryan.

Numerical Control Cost Too High?

Case Tech Professor Says It's a Design Problem

New numerically controlled machines are doing top work, but they aren't selling too well.

Prof. Mergler believes it's because controls are not designed for a specific machine tool.—By E. J. Egan, Jr.

▪ There's no doubt some of the newest numerically controlled machine tools do a bang-up job. Reams of authentic reports show they're setting new records for speed and consistent accuracy in the relative handful of plants that have them.

Then why aren't they selling like hot cakes? One trouble is the numerical control elements, in the opinion of H. W. Mergler, assistant professor of Mechanical Engineering at Cleveland's Case Institute of Technology.

Parasites — He says the logic, servomechanism, and transducer elements that make up a numerical control system "must be considered parasitic to the machine tool." Many are not designed specifically for machine tool use, he feels. They are often switched over to this service from the jobs they were designed to do in military fire control and assorted data reduction systems.

Such switch-overs might be expedient, Prof. Mergler admits. But they can impose servere cost and reliability penalties on both the machine tool builder and his customers. Cost goes up when numerical control elements have features the machine tool builder doesn't need. Reliability goes down when elements built for less rugged use must attempt to control giant machines with both speed and precision.

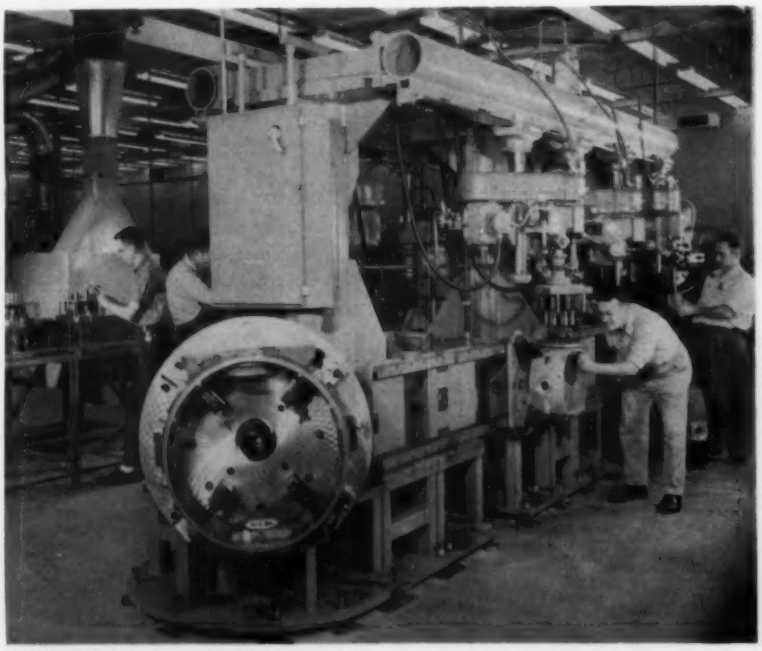
Reliability Factor—Prof. Mergler thinks reliability in the logic elements of a control system will improve when solid state and magnetic devices are used more widely. Using them now, however, only aggravates the cost problem. As a result, he says, "the manufacturer must still rely on the vacuum tube as the best interim compromise of cost and reliability . . ."

Considering servo systems, Prof. Mergler thinks both the electric and hydraulic devices now available are also a bit too costly. Essentially, this is because they're still more appendages than integral-design elements of numerically controlled machine tools.

Short Life Expectancy—As for the third "parasitic" element, the feedback transducer, Prof. Mergler says: "The life expectancy of such components does not begin to approach that required by the machine tool builder."

His analysis challenges makers of numerical control components to design less expensive, more reliable elements especially for machine tool use. Otherwise, he implies, builders might take matters into their own hands.

Gyro Gimbals for Guided Missiles from GM



VOLUME PRODUCTION: AC Spark Plug Div., General Motors has extensive new equipment for working on inertial guidance systems for missiles. Here, holes are drilled in gimbals to hold a gyro platform.

INDUSTRIAL BRIEFS

Valve Debut—A special line of nickel-coated Rockwell-Nordstrom lubricated plug valves has been introduced by Rockwell Mfg. Co. for the refining, chemical, food-processing and paper industries. Valves are designed for the same qualities of corrosion resistance as higher-cost solid nickel or stainless steel valves, with improved mechanical and physical properties.

Divisional Status—Dowell Inc., subsidiary of The Dow Chemical Co., has become a division of Dow. It is planned that the company's Canadian operations will be handled through a new Dow subsidiary. Dowell's Latin American subsidiary, United Oilwell Service, S. A., will also become a Dow subsidiary. Both companies will report through the new Dowell division.

Change of Scene — The A. F. Holden Co., Los Angeles, will be located at 3940 E. Randolph St., Huntington Park, Calif. after June 1st. The company developed and manufacturers the new luminous wall, instantaneous heating systems, and all types of industrial heat treating equipment including salt bath furnaces, chemicals and heat treating supplies.

"How are you coming on that 5 million dollar job?"

Gas for H-Iron—The National Cylinder Gas Div. of Chemetron Corp. is building a $3 million liquid oxygen, nitrogen, and argon plant near Philadelphia. The plant will provide a direct pipeline supply of oxygen for the H-iron powder production recently announced by Alan Wood Steel Co., Conshohocken, Pa.

Sub Killer Coming—The Navy has awarded a $2 million research and development contract to Lockheed Aircraft Corp.'s California Div. for ELECTRA anti-sub plane. The new sub-hunter is a military version of the Lockheed prop-jet ELECTRA. A prototype design of the ELECTRA is expected to be flying by August, 1958.

Space Dome for ASM—A contract for construction of a giant geodesic space lattice dome has been awarded to the Columbus Div. of North American Aviation, Inc. The dome will be an architectural highlight of the new American Society for Metals building 35 miles east of Cleveland, O.

Important Handshake — Arthur G. McKee & Co., Cleveland, and Raymond International, Inc., have entered into a working association. Purpose is the designing, engineering, and construction of new petroleum refineries and chemical plants for overseas customers.

Sub Parts Contracted—Westinghouse Electric Corp., Pittsburgh, has received a contract from the Navy to design and furnish reactor compartment components for five nuclear powered submarines during the 1959 shipbuilding program. Total price of the contract is $17,905,000.

New Home for Desks—What is intended to be the largest commercial office building in the world will be erected adjoining Grand Central Terminal in New York. Known as "Grand Central City" the building will contain more than 3 million sq ft of air-conditioned floor space, be fifty stories high, and cost an estimated $100 million.

High Strength Support — Pittsburgh Screw & Bolt Corp. has developed an illustrated chart to simplify installation of high strength bolts in the shop and field. The new "do-it-yourself" guide for construction superintendents and foremen was designed to speed up training of unskilled bolting crews while narrowing the margin for installation error.

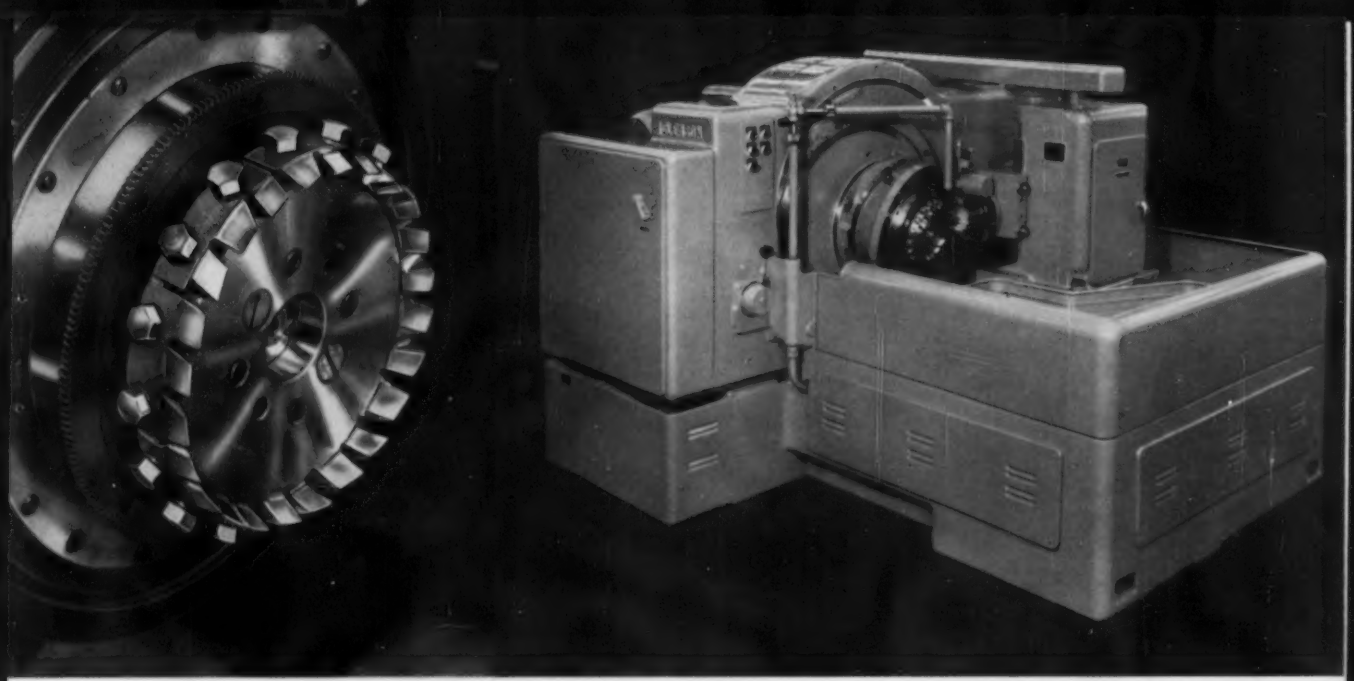
Kiln Work Underway — Allis-Chalmers Mfg. Co. will construct a new pilot plant for further development of the grate-kiln system. Valued in excess of $¼ million, the new facility will be constructed at the company's Carrollville property near Milwaukee. It is scheduled for operation in the fall.

Smooth Mover—B. F. Goodrich Industrial Products Co., Akron, O., has developed a heavy industrial conveyor belt made with smooth, non-porous covers of Koroseal polyvinyl. Koroseal covers resist oils, grease, most acids and protect against abrasion, cutting, and gouging.

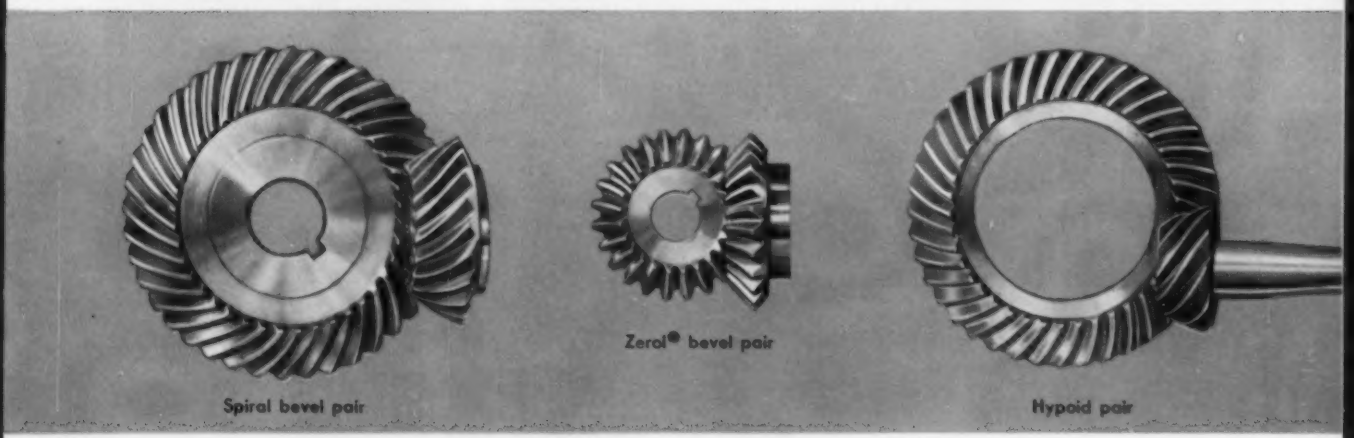
Funds for Study — Wright Air Development Center has awarded Consolidated Electrodynamics Corp., Pasadena, Calif., a $99,000 research and development contract. It calls for a mass spectrometer instrumentation system that will be used in materials research and analysis.

Happy New Year—The Associated Piping & Engineering Co.'s Southern Div. plant at Culport, Miss., is scheduled to start production of prefabricated pressure pipe assemblies June 1. It will have an initial employment of between 75 and 100.

Fruitful Labor—A total of $1,200 in cash awards have been paid to six employees who prepared the best entries in the 19th annual technical papers competition sponsored by Dravo Corp. Award winners were: F. J. Larkin, F. R. Burde, W. L. Pierce, T. M. Berry, C. F. Ingwalson and R. E. Stephan.



With *one* Unitool* Cutter and *one* machine



Spiral bevel pair

Zerol® bevel pair

Hypoid pair

you can produce all three types

Now it takes only a relatively small capital investment to equip a shop for producing prototypes or small quantities of spiral, Zerol® bevel and hypoid gears.

The new Unitool Method requires only one machine, the No. 116 Hypoid Generator shown above or the smaller No. 106, and one Unitool Cutter to rough and finish both gears and pinions of a particular combination.

A total of six Unitool Cutters cover gears and pinions of all designs from 1.3″ to 8.0″ cone distance, 0.4″ to 2.2″ face width, and 16 to 2.5 DP.

Simplified, slide-rule calculations make it possible for even inexperienced personnel to turn out gears of high quality.

*Trade Mark

Gleason generators are versatile

The Unitool Method is only one of four that you can use on the No. 106 and 116 Generators. The same machines can be used for standard generating for medium gear and pinion production. In addition, for volume gear production they can be specially arranged for the Single-Cycle® Method where each tooth of a roughed-out, non-generated gear is finished in one cutting revolution of the Single-Cycle Cutter, or the Cyclex® Method where non-generated ring gears are both roughed and finished *in one cut* from the solid blanks.

For further information on the Unitool Method and for assistance with any design or manufacturing problem involving bevel gears, just write us.

GLEASON WORKS

Builders of bevel gear machinery for over 90 years

1000 UNIVERSITY AVE., ROCHESTER 3, N.Y.

10 reasons why the Signode SFC is the savingest tool for strapping

$ With the SFC, one handle does the tensioning and the sealing. That's why one hand is free to align the straps and move the package. The SFC is the only one-hand seal feed tool. But that's not all.

$ You can put a cartridge of 50 Signode seals into the SFC magazine in a few seconds...as quickly as placing a loose seal on a strap. No seals wasted.

$ The SFC is the simplest of all seal feed tools to learn about and to operate. Even our advertising agency man learned to use it in about 7 minutes.

$ The SFC will not operate unless the strap is properly aligned. In most seal feed tools misalignment wastes strap. It can't happen with the SFC.

$ Plenty of power...easily. The smooth-working SFC has a good long handle... straps directly from the dispenser. It's as good on big packages as on small ones.

$ The SFC weighs only 6½ pounds, loaded. It's the lightest seal feed tool on the market, and the most versatile. You don't have to mount it in a fixed position. Take it anywhere in the plant.

$ Light weight lets you use the SFC as easily on the sides of the package as on the top. (Anybody know of an overhead strapping application?)

$ The short base and centered balance of the SFC makes it easy to use on small packages, on cleats or other narrow surfaces, or on the edge of a box.

$ The SFC can be used with the strap dispenser either in front or behind the operator—whichever fits your layout best.

$ With all its advantages, the SFC is the *lowest cost seal feed tool* on the market.

First in steel strapping

You will like the SFC. It is a rugged, high-quality tool. See and try it. No obligation. Call the Signode man near you, or write:

SIGNODE STEEL STRAPPING CO.

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Offices Coast to Coast. Foreign Subsidiaries and Distributors World-Wide
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160″ MILL FOR ROLLING ALUMINUM PLATE

UNITED ENGINEERING AND FOUNDRY COMPANY
PITTSBURGH, PENNSYLVANIA

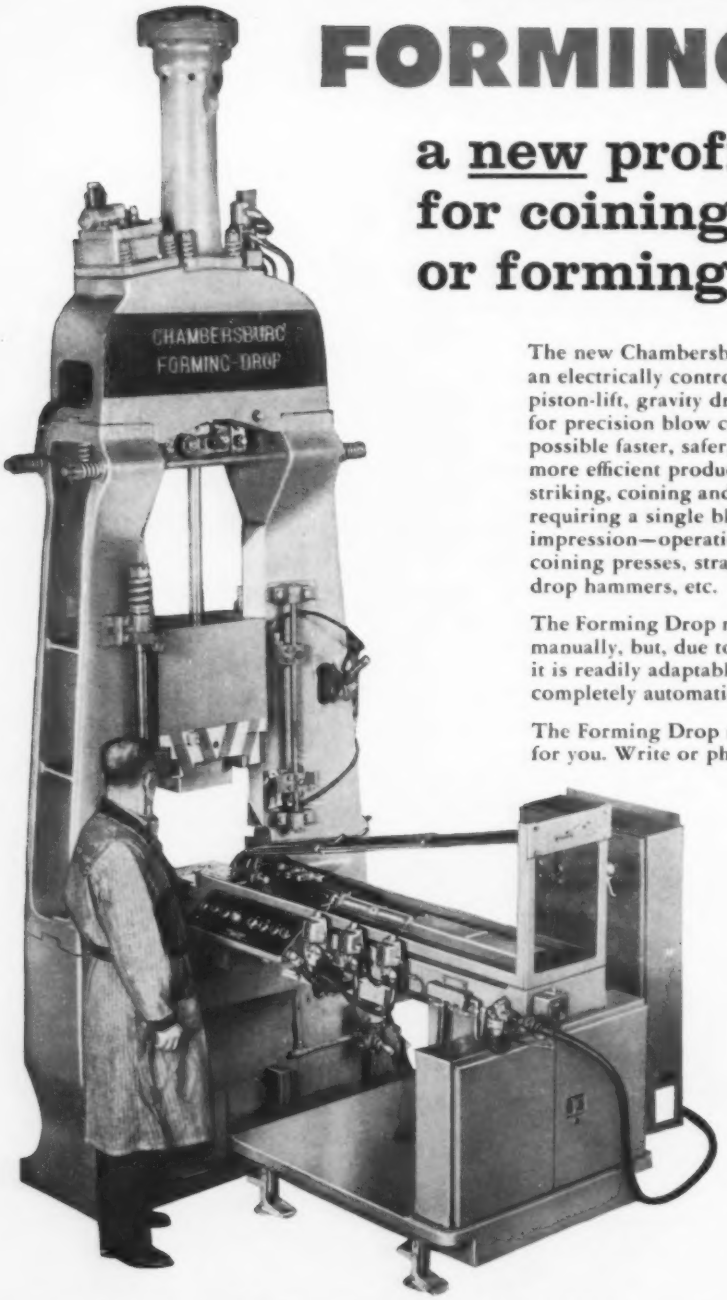
Plants at Pittsburgh, Vandergrift, Youngstown, Canton, Wilmington

SUBSIDIARIES: Adamson United Company, Akron, Ohio; Stedman Foundry and Machine Co., Inc., Aurora, Indiana

Designers and Builders of Ferrous and Nonferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses and other heavy machinery. Manufacturers of Iron, Nodular Iron and Steel Castings and Weldments.

CHAMBERSBURG
FORMING DROP

a new profit maker for coining, embossing or forming operations

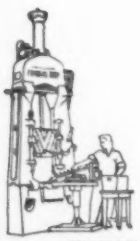


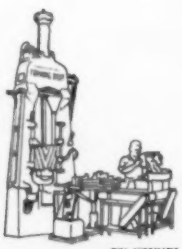
The new Chambersburg Forming Drop is an electrically controlled, air-operated, piston-lift, gravity drop hammer, designed for precision blow control. It makes possible faster, safer, almost effortless, more efficient production on forming, cold striking, coining and embossing operations requiring a single blow in a single die impression—operations common to coining presses, strap hammers, pneumatic drop hammers, etc.

The Forming Drop may be fed and operated manually, but, due to its electrical control, it is readily adaptable to semi-automatic or completely automatic operation.

The Forming Drop may hold possibilities for you. Write or phone for further details.


MANUAL


SEMI-AUTOMATIC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CHAMBERSBURG

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BOARD DROP

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THE IMPACTER


FLAT DIE SINGLE FRAME


FLAT DIE DOUBLE FRAME


PNEUMATIC SELF-CONTAINED


TRIMMING PRESS

E. K. Welles, elected chairman of the board and chief executive officer, Besly-Welles Corp.; **W. C. Olson,** elected president and chief administrative officer.

L. G. Porter, becomes president and general manager, Long Mfg. Div., Borg-Warner Corp., Detroit & Long Mfg. Co. Ltd. of Canada, a subsidiary.

R. J. Sloan, elected president, Crouse-Hinds Co., Syracuse, New York; **R. W. Cummings,** elected secretary.

E. R. Skaggs, appointed executive vice president, Townsend Engineered Products, Inc., Santa Ana, Calif.

J. M. Small, elected vice president, treasurer and director, Detroit Power Screwdriver Co., subsidiary of Link-Belt Co.

C. E. Pfeiffer, elected vice president, Michigan Seamless Tube Co., South Lyon, Mich.

R. G. Fisher, appointed vice president, marketing, Continental Can Co., New York.

F. R. Milliken, appointed executive vice president, Kennecott Copper Corp.

M. L. Phillips, appointed vice president, Alloys & Chemicals Mfg. Co., Inc., Cleveland.

J. J. McGrann, named district manager, Los Angeles office, The Timken Roller Bearing Co.'s Steel & Tube Div.

P. O. Geier, Jr., elected vice president and director, Cincinnati Milling & Grinding Machines, Inc., sales subsidiary of The Cincinnati Milling Machine Co.

L. A. DePolis, elected vice president, marketing, LeTourneau-Westinghouse Co., Peoria, Ill.

J. P. Rubie, appointed manager, materials, Magnetic Materials Section, General Electric Co., Edmore, Mich.

Bayard Allis, elected asst. secretary and asst. treasurer, Barium Steel Corp., New York.

W. G. Jones, elected vice president, sales, and director, Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.

R. H. Jones, promoted to director, profit control and computer programs, and **S. M. Cebulko** to general audtor, Sharon Steel Corp., Sharon, Pa.

W. K. Mathias, elected vice president, Cincinnati Milling & Grinding Machines, Inc., sales subsidiary of The Cincinnati Milling Machine Co.

T. M. Dillaway, elected secretary, Buffalo Forge Co., Buffalo, N. Y.

H. O. McCully, elected senior vice president, Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.

J. R. Reinsma, named manager, industrial sales, Alemite lubrication

products, Stewart - Warner Corp.; **W. J. Hawkins,** appointed general service manager, Alemite & Instrument Div.

S. E. Huffman, Jr., appointed manager, sales Press Div., E. W. Bliss Co.

E. B. James, appointed vice president, sales, The McKay Machine Co., Youngstown, O.

J. R. Markey, elected secretary, Aro Equipment Corp., Bryan, O.

E. C. Hughes, elected president, Bay State Abrasive Products Co., Westboro, Mass.

H. G. McLaughlin, appointed manager, Ordnance & Missiles Industry Sales Dept., Kaiser Aluminum & Chemical Sales, Inc., Chicago.

J. R. Anderson, promoted to asst. general manager, and **D. L. Janoff** to chief engineer, Materials Handling Div., Heppenstall Co.

R. W. Remke, promoted to superintendent, Cold Rolled Finishing Dept., Granite City Steel Co.

M. H. Luria, appointed district manager, Pacific Coast area, Luria Brothers & Co., Inc.

R. E. Coates, named asst. sales manager, hydraulic turbines, Eddystone Div., Baldwin-Lima-Hamilton Corp.

O. S. Buckner, elected chairman of the board, Bay State Abrasive Products Co., Westboro, Mass.

J. A. Neyenhouse, Jr., appointed asst. district manager and manager, sales, U. S. Steel Supply Div., U. S. Steel Corp.

K. D. Stoddart, appointed purchasing agent, Copperweld Steel Co., Warren, O.

E. L. Layland and **R. E. Davis,** appointed manager, metallurgical engineering and manager, solid state electronics engineering, respectively,

Westinghouse Electric materials engineering departments.

J. C. Geuther, appointed sales representative, Northeast district sales office, The Trent Tube Co., New York.

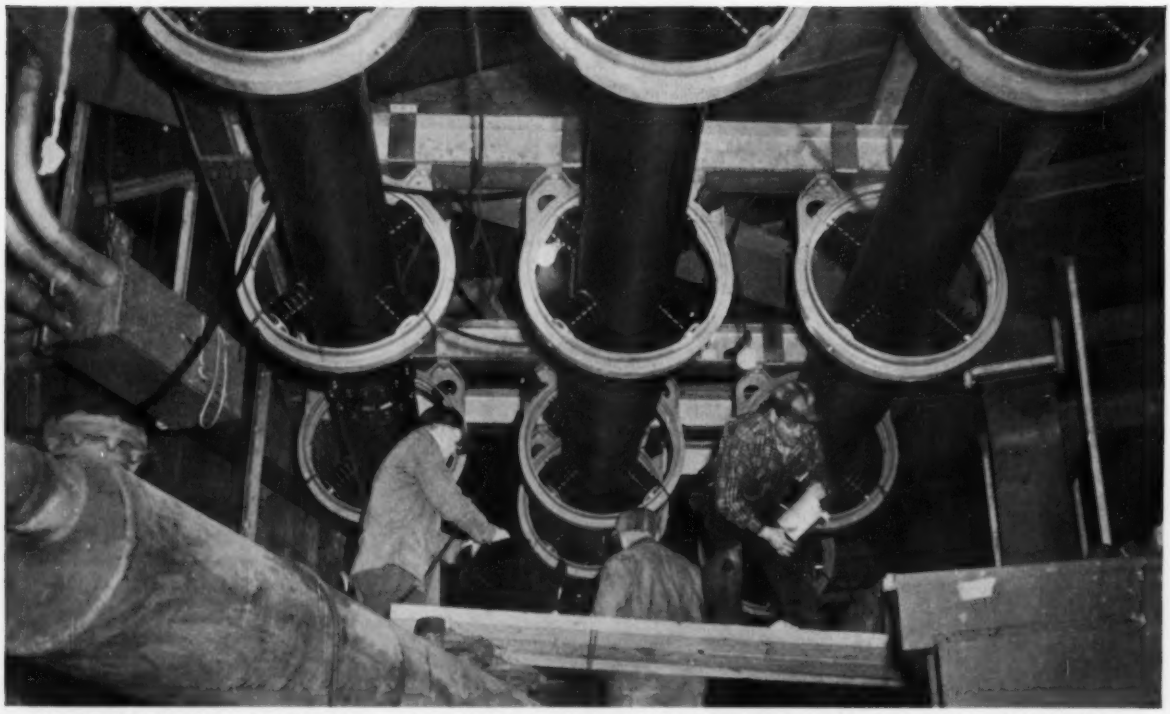
David Ferguson, appointed controller, Copperweld Steel Co., Pittsburgh.

F. W. Schroeder, appointed director, research, North American Refractories Co., Cleveland; **R. A. Moffett,** appointed director, technical service.

R. A. Arnett, appointed marketing manager, Industrial Instrumentation Div., Texas Instruments Inc., Houston, Tex.

W. H. C. Webster, appointed vice president, administration, Great Lakes Steel Corp.

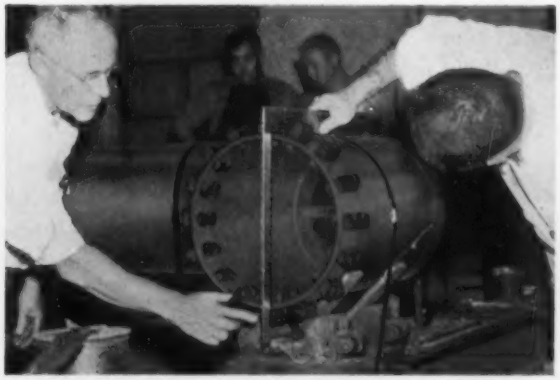
R. F. Norris, appointed plant manager, Denison Engineering Div., Delaware, O., plant, American



Installing the self-cooled isolated phase bus structure to carry 6500 amps at 20 kv from the generator to the power transformers at Steam Turbo-Generator Unit #3 at the Astoria Station of the Consolidated Edison Co. The tubular copper bus, 13½" O.D., .406" wall thickness, is wrapped with black insulating tape prior to installation.

Big Tubular Copper Bus Carries 6500 amps at 20 kv

At its #3 Steam Turbo-Generator at Astoria, L. I., the Consolidated Edison Company uses these large Anaconda tubular copper conductors to carry generator output to the power transformer. These special conductors are another example of how Anaconda can help meet special conditions. Though well beyond the standard-pipe-size copper bus tube, they are by no means the largest. Anaconda can produce seamless copper tubes up to 26 inches, I.D.



13½" O.D. x .406" tubular bus being fabricated at R & I E Equipment Div. of I-T-E Circuit Breaker Co., Greensburg, Pa. Everdur® nuts are silver-alloy brazed inside the tube and the bolts withdrawn. Then in assembly at the site, the nuts are in place for fast, easy installation. A total of 1,128 feet of tubular bus was required.

In general, where mechanical requirements permit, bus costs can be cut through the use of tubular bus conductors with low wall-thickness-to-diameter ratios. The weight of metal purchased goes down as the t/d goes down. Round tubes in the standard pipe dimension, and thin-wall sizes, also offer other advantages. They make it possible for you to utilize the great variety of stock sizes of supports, connectors, clamps, and other line hardware.

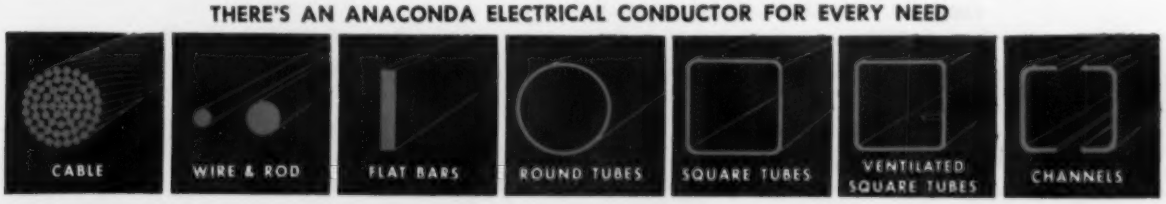
TECHNICAL SERVICES. Anaconda specialists are available to help you in the solution of technical problems involving the use of Anaconda Bus Conductors. For such service, or for a copy of Publication C-25, see your nearby Anaconda representative. Or write: The American Brass Company, Waterbury 20, Conn.

ANACONDA®

COPPER CONDUCTORS

Made by The American Brass Company

THERE'S AN ANACONDA ELECTRICAL CONDUCTOR FOR EVERY NEED



Brake Shoe Co.; **C. W. Lindahl,** named works manager, all Denison manufacturing activities, Columbus plant; **G. T. Hays,** becomes director, purchasing, Denison Engineering Div.

Edmund Pfeifer, named director, purchases, and member, Management Committee, Lukens Steel Co.

J. S. Tompkins, named chief engineer, Aluminum Co. of America, Pittsburgh.

Donald Rhodes, promoted to district sales manager, Rochester, N. Y., Vickers, Inc., Detroit.

OBITUARIES

J. D. Glenn, 52, former vice president and general manager, sales, Crucible Steel Co. of America.

J. W. Wolfe, 66, retired secretary-treasurer, Non-Ferrous Founders' Society.

W. K. Farrell, 70, former general purchasing agent, American Locomotive Co.

Three-time ABC winner, famous bowler BILL LILLARD slams in strike after strike sending ball and pins flying against piece of TI-CO set up in pit. Close up examination by Bill shows plenty of punishment but no flaking. TI-CO's zinc coating rolled with the punch!

BOWLING CHAMP FAILS TO FLAKE INLAND TI-CO®!

Switch to TI-CO Non-Flaking Galvanized saves manufacturers up to 15% in Production Costs.

A well-known garage door manufacturer dispensed with plating operations—reduced costs 10%. A leading furnace manufacturer saved $20 per thousand parts produced by eliminating cleaning and painting. A company making roller gravity conveyors cut out similar operations. These are just a few of many case histories of manufacturers who realized important savings and improved their product when they started using TI-CO Galvanized Sheets.

Whenever a product requires the strength of steel, plus corrosion resistance, Inland TI-CO is the most satisfactory . . . the most practical . . . the most economical material to use. That's because TI-CO is produced with a zinc coating that will not flake even under the toughest conditions. The coating stretches with the base metal during fabrication. Deep drawing, brake or roll forming, crimping, stamping, lock-seaming even severe spin-drawing . . . TI-CO takes them all in stride with no flaking or peeling. With TI-CO there's no need for costly dipping or touching up. And the uniform, bright spangled finish adds to the over-all attractiveness of the product.

If you're manufacturing or designing a metal product that requires corrosion resistance, consider TI-CO Galvanized Sheets. Manufactured in coils or cut lengths up to 60" widths, gauges 8 to 30 inclusive. Consult your local steel distributor or Inland sales representative. Write today for a free informative booklet on TI-CO.

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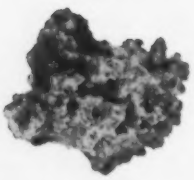
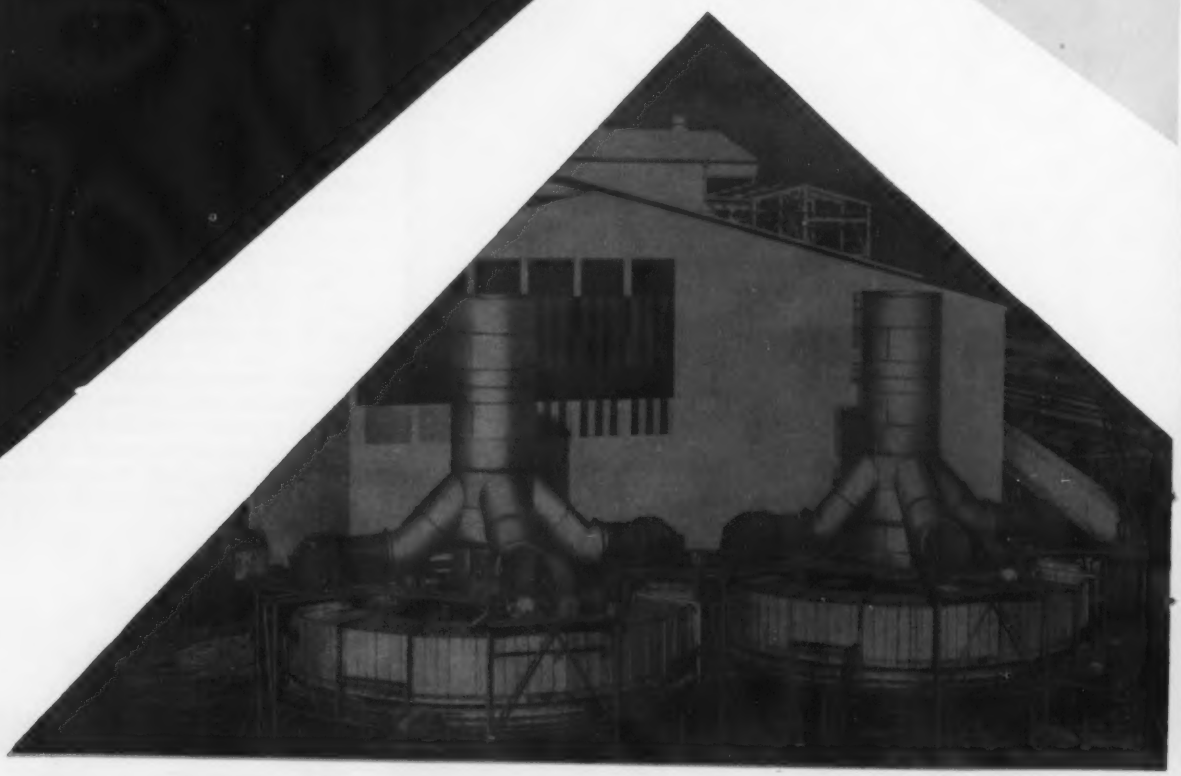
Dravo sinter plant



design . .



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Research plays a major role
in the design
of Dravo-Lurgi sinter plants.
Many of the basic design features
are the result of years
of Lurgi experience and research, adapted to
American standards by Dravo.
The design of each plant
is based on sintering characteristics
of the ores to be processed as determined by
exhaustive testing procedures at
Dravo's Research Center.
Complete facilities, extensive experience and
painstaking attention to detail
qualify Dravo as a prime source
of sinter plant design
and construction.
Why not discuss your sintering plans
with a Dravo engineer.
A letter or phone call
will receive prompt attention.
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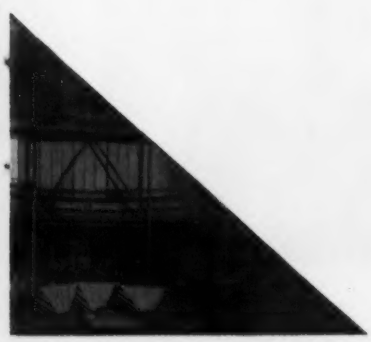
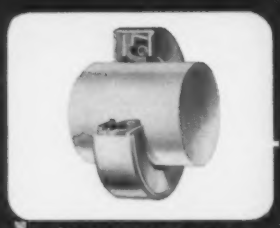
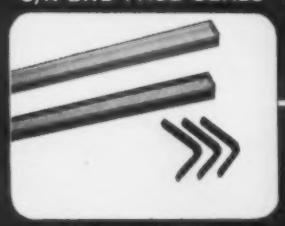


FOR PERFORMANCE PROTECTION

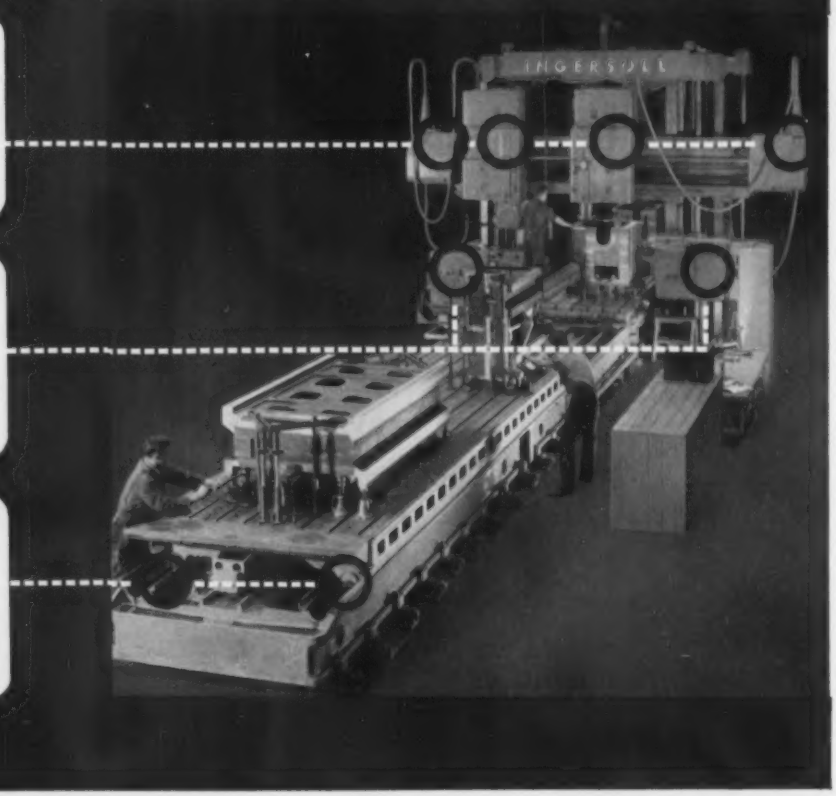


C/R SHAFT SEALS

C/R END FACE SEALS



C/R SIRVENE WAY WIPERS



C/R . . . GUARDS PRECISION, SAVES DOWNTIME, LENGTHENS SERVICE LIFE

Which seal is the best answer to your problem? C/R Engineers know. They've helped machine tool builders solve tough sealing problems—successfully—for years.

C/R SHAFT SEALS deliver outstanding sealing performance and service life on medium speed shafts, gear cases and drive mechanisms. They seal lubricants, exclude chips, coolants, abrasives—and require minimum radial and axial space.

C/R END FACE SEALS are lapped to micrometric tolerances to provide absolute lubricant retention and exclude chips, coolants and all foreign materials on high speed spindles, shafts and drives under the most critical service. Normally they operate throughout the entire life of the machine tool.

C/R SIRVENE WAY WIPERS give maximum protection to sliding assemblies under long and continuous operation, and will not lap or mark rails. Available in metal-cased, spring-loaded, and plain designs for flat, angular and circular ways.

More automobiles, farm and industrial machines rely on C/R Oil Seals than on any similar sealing device.

OIL SEAL C/R DIVISION

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Export Sales: Geon International Corp., Great Neck, New York

Other C/R Products

Sirvene (synthetic rubber) molded pliable parts • Sirvis-Conpor mechanical leather cups, packings, boots • C/R Non-metallic Gears

High-Temperature Carburizing Takes Half The Time

How do some of the more widely used SAE grades of steel carburize at 1800°F? At 1900°F?

Here is a first-hand report on new carburizing cycles that actually cut furnace time in half.

From a cost standpoint, this could be the trend of the future.

By P. M. Unterweiser—Metallurgical Editor

■ Theoretically, the notion of going to higher carburizing temperatures makes a great deal of sense. Practically, it's a project that has never been tried on a production basis. That it will be—and soon—is almost certain.

There are convincing economic factors that indicate a coming boom in high-temperature carburizing. All of them stem from results obtained in recent laboratory test programs. All of them point to operational savings that cost-conscious industry isn't likely to ignore.

Going back to 1956, an impressive Russian report indicated the complete success of high-temperature carburizing at selected temperatures up to 1920°F. No appreciable grain growth resulted even at the highest temperature tested. Under certain conditions, the rate of carburizing was tripled.

Different Steels—But the Russian test results, however successful, applied to steels that were not identical in chemical composition to standard U. S. grades. Thus the Russian tests appeared to prove the validity of a principle. But the question remained: Would the standard carburizing grades that we normally use respond in the same way?

A preliminary test program recently completed provides a positive answer. Standard low-alloy steels such as 4620, 8620, and 9310 can be advantageously carburized at temperatures above the conventional carburizing temperature range (1700°-1725°F). A case depth normally achieved in 12 hours can be attained in 6 hours when carburizing temperature is increased to only 1800°F.

Up to 1900°F—These and other important results were obtained in tests conducted by Hevi-Duty Electric Co. in cooperation with Chain Belt Co. and The Falk Corp., all of Milwaukee. The cooperative program covered carburizing results at three temperature levels up to

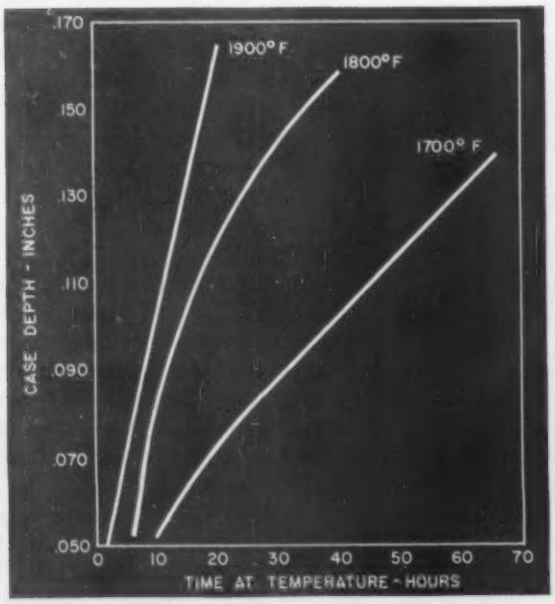


FIG. 1: Carburizing rates for 8620 steel at three levels of temperature.

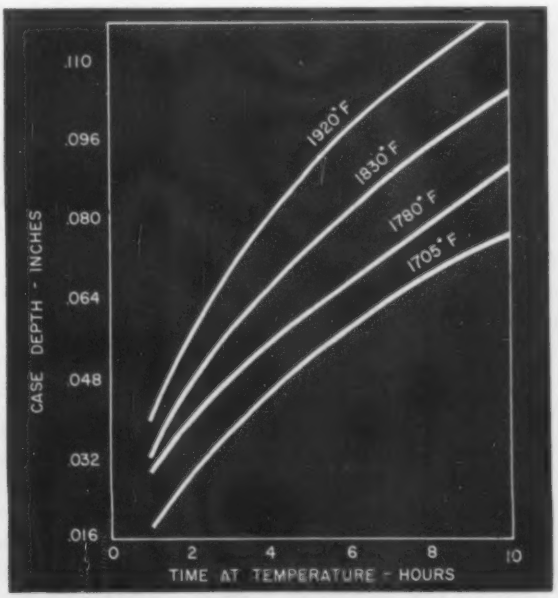


FIG. 2: Carburizing rates for Russian Ti-modified low-alloy steel, 18KhGT.

TABLE 1 | Carburized Case Depths (to 60 pct C)

SAE Type	4620			9310		
Temp. Deg. F	1700	1800	1900	1700	1800	1900
3 Hours			0.038			0.056
6 "		0.040	0.049		0.057	0.077
12 "	0.037	0.073	0.088	0.055	0.096	0.117
24 "	0.060	0.080	0.130	0.075	0.131	0.196
48 "	0.094	0.139		0.100	0.160	
96 "	0.096			0.178		

TABLE 2 | Average Compositions of Russian Carburizing Media

°C	°F	Percentage in Gas of:				
		CO_2	O_2	CO	H_2	CH_4
930	1705	0.7	0.5	34.0	46.0	2.9
970	1780	0.8	0.3	34.6	46.0	2.0
1000	1830	0.5	0.2	36.2	47.5	1.5
1060	1920	0.3	0.0	40.2	48.2	0.9

(In all cases, balance is nitrogen.)

1900°F. In all, four SAE grades of steel were tested.

The tests were run in a Hevi-Duty vertical retort furnace. This furnace is equipped with a circulating fan and incorporates two zones of control. The atmospheres used consisted of an endothermic carrier gas (dew point: 32°F) and natural gas.

In addition to the low-alloy grades mentioned, samples of plain-carbon 1018 were also tested. Bushings made of 1100 and 8600 series steels and supplied by Chain Belt were run with some of the test loads.

Broad Coverage — Test samples consisted of 8-in. lengths of 1-in. diam bar. For the three carburizing temperature levels tested (1700°, 1800°, and 1900°F), loads were run for periods of 12 and 24 hours. In addition, 3-hour and 6-hour loads were run at 1900°F; 6-hour and 48-hour loads at 1800°F; and 48-hour and 96-hour loads at 1700°F. This distribution appears to cover most, if not all, known industrial applications.

At all temperature levels and cycle times, a standard heat treating procedure was followed. Specimens were loaded into the furnace at 1500°F. Then, under protective endothermic atmosphere, furnace and specimens were raised to the desired carburizing temperature.

Use Natural Gas — When this temperature was attained, natural gas was introduced and the specimens were carburized for the time specified. A circulating fan provided adequate distribution of the atmosphere during the carburizing cycle.

At the end of the required carburizing time, furnace and specimens were cooled — again under protective endothermic atmosphere. At 1500°F, all specimens were transferred to a slow-cool chamber.

In the preliminary program, no provision was made for a diffusion or soaking period. This omission was intentional, since a primary objective was to determine what levels of case carbon content would be obtained without special diffusion. No special controls were provided to regulate or limit carbon potential. Controlled potential is planned for future tests.

Twice As Fast—In one series of tests run with 4620, a case depth of 0.073 in. (measured to a carbon level of 0.60 pct C) was obtained in 12 hours at 1800°F. At 1700°F for the same period of time, case depth was only 0.037 in. In this instance, carburizing rate was approximately doubled by an increase of only 100°F in the temperature.

Control Carbon — Essentially, high or low-carbon contents can be obtained depending upon the carbon potential of the atmosphere. From a test standpoint, control of carbon potential is not a critical factor. It is a refinement, however, that would have to be provided for production runs. Case depths obtained at the various temperatures and times for both 4620 and 9310 are shown in Table 1.

Significantly, samples of both grades of steel had a grain size of 7 to 8 prior to carburizing. The grain size was not altered as a result of carburizing.

Grain Growth?—Whether or not austenitic grain growth was inevitable during high-temperature carburizing is a critical point which seems to have interested the Russian experimenters. Citing their own references, they noted that it was the general opinion that raising the carburizing temperature to even 1830°F would cause considerable grain enlargement. This condition, in turn, would seriously lower mechanical properties.

Taking a practical approach, they also noted that the grain growth argument was based on information "rather general in character and not quantitative." To be sure, they made a meticulous check of grain conditions at temperatures up to 1920°F.

Ironically, they discovered that some grain enlargement occurred at a lower temperature (1705°F) because of the excessive time required to achieve a heavy case depth. (The cycle at 1705°F was

three times as long as that at 1920°.)

Two Exceptions—In general, the Hevi-Duty program found no significant change in grain size except in the 1018 and 1100 specimens. These steels were relatively coarse-grained prior to carburizing. But in both cases, time at heat appeared to do more to effect grain coarsening than specific carburizing temperature.

At the end of 24 hours at temperature, grain size ranged from 1 to 4 in loads run at 1900°F. But the same amount of grain coarsening also occurred in loads run at 1700°F.

Same Conclusions—Although the Russian and Hevi-Duty programs differed in some details, the overall results obtained are highly comparable. Where Hevi-Duty used natural gas as the carburizing medium, the Russians used either benzene or pyrobenzene.

Among the Russian steels tested were: a grade approximating 9420, a modified 4100-type steel with titanium and without molybdenum, two 3-pct chromium steels containing either titanium or vanadium, and a steel that comes close to our 3300 series. But even these differences in materials and carburizing media do not significantly affect the major conclusions that can be drawn from the results of both programs.

Rate Increased — It is obvious from these results that both carburizing rate and case carbon gradient are dependent upon temperature. Even a relatively slight increase in carburizing temperature appears to have a marked effect on carburizing rate.

The Russians contend that the rate of carburization also depends on the rate of circulation of the carburizing atmosphere. Their results "were obtained with the furnace gases completely changed 100 times per hour, calculated on the total volume of the furnace interior. If the rate of circulation were to be higher, the uniformity of carburization would be impaired." On the other hand, "lowering the rate of circulation to complete changing 50 times per hour lowers the rate of carburization 25 to 30 pct."

Ready Now—From results obtained to date, high-temperature carburizing is ready to be put on a production basis. Control of carbon potential will be required. There is no apparent reason why currently available control equipment should not be able to handle the job.

Although the mechanical properties of high-temperature carburized steels have not been thoroughly checked in the U. S., it seems safe to assume that they will not differ appreciably from conventionally carburized steels. The Russians ran comparative tests of tensile, impact, and rotating bend fatigue properties and could find no significant difference.

About Costs—For those who require heavy-case carburizing, the cost aspects of high-temperature carburizing are very promising. Any technique that can cut a 12-hour carburizing cycle down to 6 hours should increase production and save money. What's more, it should reduce overall costs even though furnace life is bound to be lowered.

From a practical production standpoint, the 1800°F carburizing temperature seems to be the best bet at the moment—despite the fact that it doesn't provide maximum carburizing rate. It is only 75°-100°F higher than conventional temperatures and should have the least effect on furnace life.

In time, there are bound to be cost studies made that will balance furnace life against carburizing rate. Once this information is available, it will be a simple matter to pick the highest carburizing temperature compatible with furnace maintenance and replacement costs.

Extend Range—One other point is worth keeping in mind. Although the economics of long-time, high-temperature carburizing seem most attractive at the moment, it is entirely possible that shorter time cycles will be equally feasible in the future.

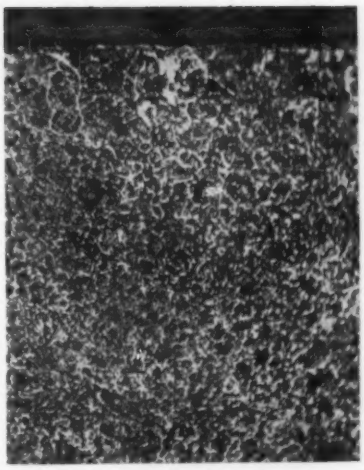


FIG. 3: At 100X, no grain enlargement is visible in 8620 after carburizing at 1900°F for 24 hours. Etchant is 5 pct Nital.

Just as soon as an industrial demand for high-temperature carburizing equipment begins to develop, new furnace improvements are sure to follow. Some are already in production. Such improvements may make it possible to extend the range of high-temperature carburizing to virtually all industrial applications.

Reference: Shuval, Lupakov, and Feldman: "High-Temperature Gas Carburizing of Steel" (1956), Brutcher Translation No. 3806.

Acknowledgment — The editors would like to thank Hevi-Duty Electric Co., Chain Belt., and The Falk Corp. for the technical information contained in this article. They would also like to thank Mr. Henry Brutcher, Altadena, Calif. for permission to quote from his translation No. 3806.

How Building Block Design Works

The building block concept is growing, especially where in-line machines are concerned.

They're proving versatile, easily adaptable to different parts and future design changes.

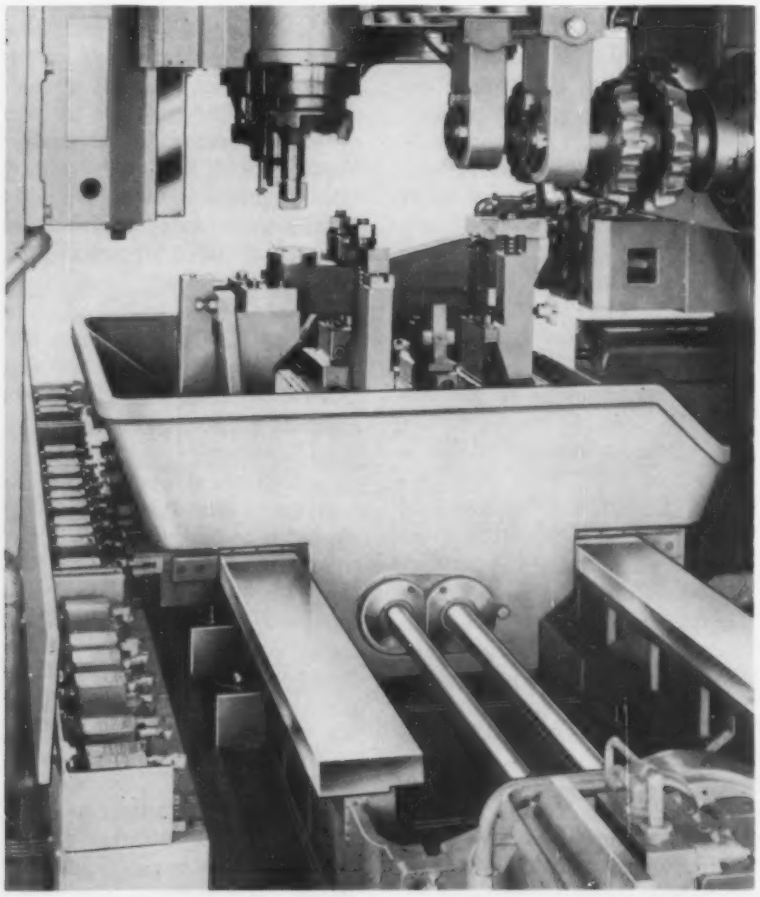
Here are the facts on how two such machines are working out.

By R. H. Eshelman—
Engineering Editor

▪Although we're hearing more and more about the building block concept in machine tools these days, special machine builders have been using it for some time. Standard drilling and milling heads, transfer devices, feeds and controls are examples. In fact, Buhr Machine Tool Co., Ann Arbor, has used standard machine bases for 15 years.

Pallet-type transfer lines seem especially suited to the building block approach. Two such Buhr machines in use today are the 20-station automatic line for a power steering housing at Chrysler's Highland Park plant, and a variable station machine being used by a road machinery builder.

The latter is arranged for quick changeover, making it possible to machine six different, though similar, parts. Any one workpiece stops at only six to eight of the 20 stations. The operator switches cycles from one piecepart to another by turning a selector switch.



QUICK CHANGE: Machine incorporating building block components has built-in sequences for switching quickly from one part to another.

Converts Quickly—Use of building block components in this machine will make it easy to convert to production of other items. Originally the machine was designed to handle four parts. During construction the setup was changed to take six parts, then five, and finally back to six. And not all the parts are the ones initially planned.

Changing the basic machine to handle a different part requires only changing tools and work-holding fixtures; feed stops on the heads may also have to be reset.

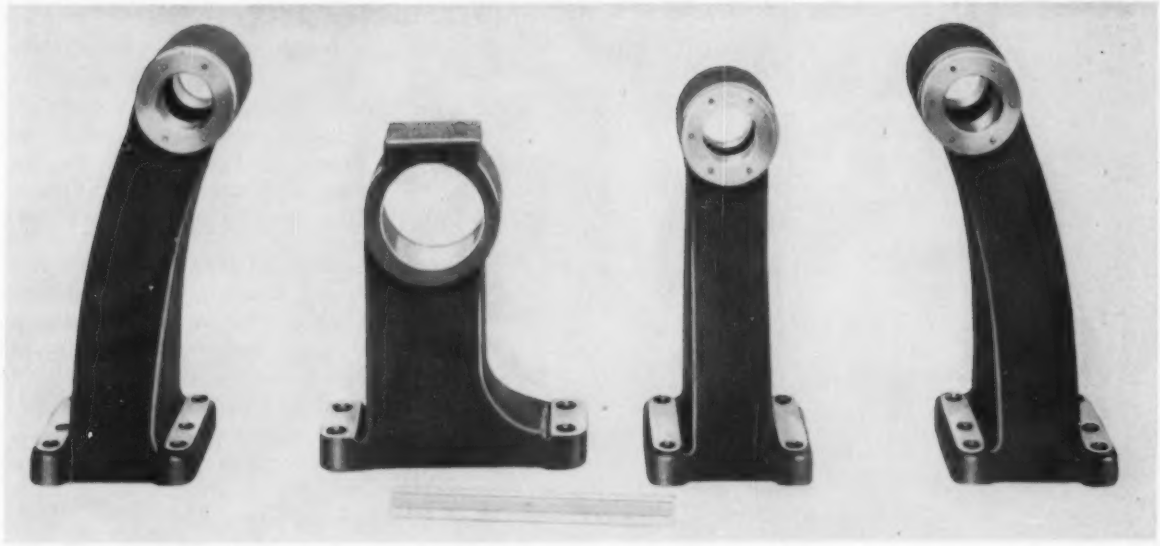
Use of the pallet and shuttle system gives the unit much of its flexibility. Shot bolts position the pallet at each work station, engaging a specific hole in a rail on the undersides of the pallet. Thus part location and positioning are altered with minimum machine changes.

The unit mills, bores, hollow mills, faces, drills and chamfers. It permits a variety of part design changes, including shortening overall part length, increase of boss thickness, change in boss diameter, changes in flange dimensions and bearing bore.

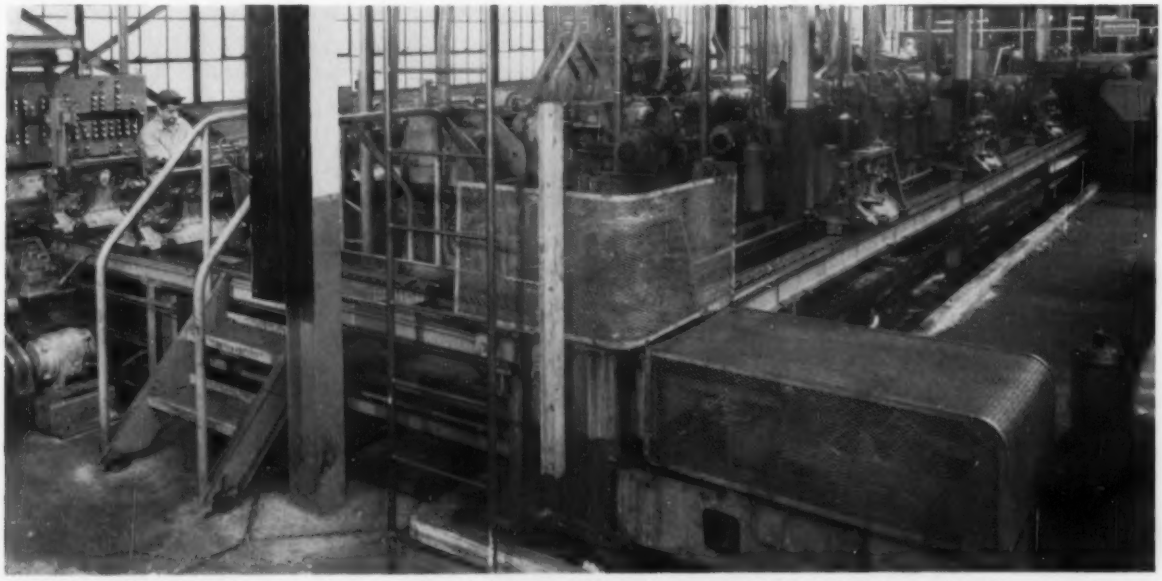
In general, parts for which the machine can be used are limited only by the volume of work space. For a different type of part, some rewiring of selector and limit switch circuits may be needed.

A Step Further—Standard components and traveling pallets with automatic locating and clamping are also used in the Chrysler pump housing machine. It gets even more flexibility, however, by means of sectional bases. These make it possible to spread the machine and add extra stations later.

Revamping electrical and hydraulic accessories would pose no special problems. This machine is



VERSATILE UNIT: Six similar parts, four of which are shown here, can be run on the same machine.



CLOSED CIRCUIT: Rectangular run-around brings pallets back to original starting point for second run.

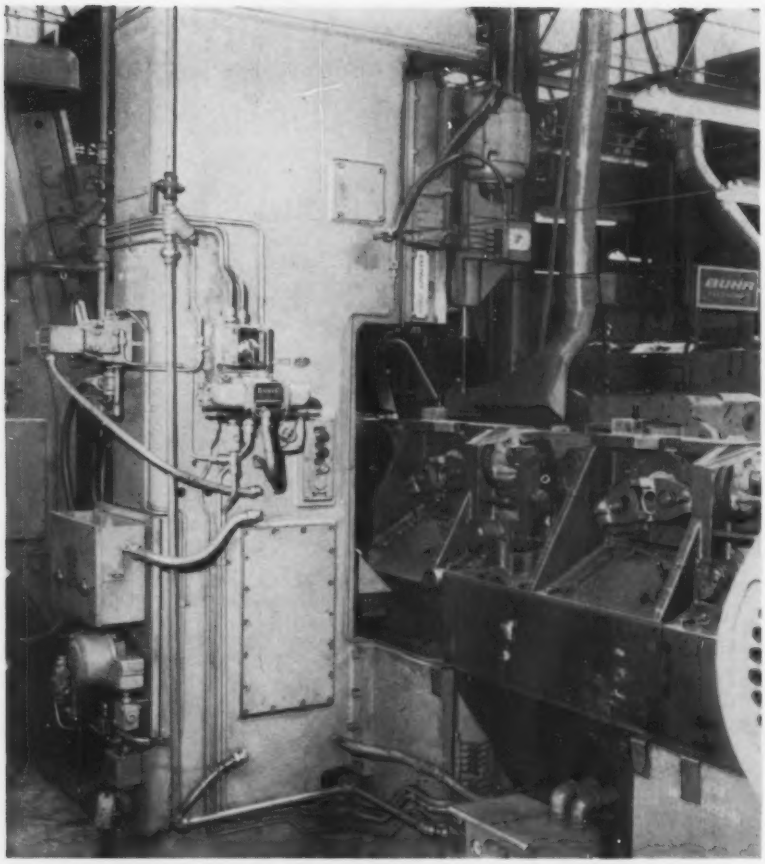
the in-line type, with a rectangular track for return of pallets to the starting point.

Double-Duty Pallets—Although pallets are not considered too desirable if they can be avoided, they have been used to good advantage in the Chrysler machine. The pallets carry two parts. Each workpiece makes the circuit of stations twice. First it's carried in a face-out position. After machining is finished from the front it's reloaded sidewise on the pallet for remaining operations.

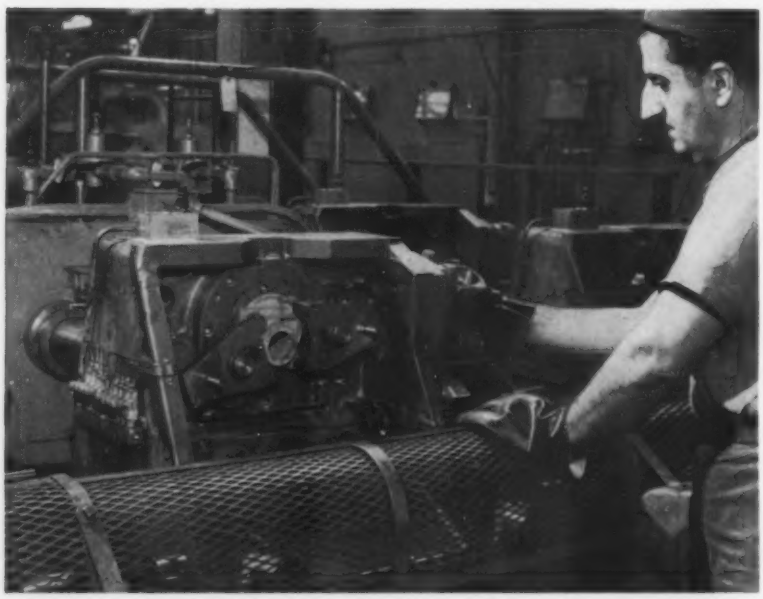
This double duty for pallets overcomes objections of limited production and excessive idle transfer. Automatic forced lubrication of the pallets and fixtures minimizes downtime.

The machine does 36 operations on the steering pump housing. These include drilling and tapping, milling mounting lugs and bosses, boring and chamfering.

Looking Ahead — Because of design changes for the next model year, plans for modifying the unit are already under way. Here's where the use of building block components pays off. In some cases it has been necessary to scrap an entire automation line after only one or two years of use. Modification costs can become excessive, and production is delayed while transfer equipment is shipped to and from the machine builder's



VARIABLE LAYOUT: Standard units, accessories, heads and sectional bases are easily rearranged to accommodate future part changes.



DOUBLE DUTY: Each pallet holds two castings. Workpiece faces and most holes are machined in one position, then parts are remounted sidewise for second go-around.

plant. Then the line must be installed and debugged.

In this instance rework will take place on the production floor. It's felt a major part of the modification will be retooling about 80 pct of fixtures and multispindle heads. Cost is expected to be no more than about ⅓ that of a new line.

How and When—While the line is still turning out parts, machine redesign is being worked out in complete detail. Before the end of the production run Chrysler will build up a bank of parts, including those needed for future service. In this way the pump housing line can be dismantled with minimum delays in production.

New workholding fixtures and other tooling will be completed before the modification date. Actual rebuilding time will be held to 12 weeks or less. By using their standard building block components, Buhr expects to hold debugging time down, too.

Growing Use—This approach is finding favor in the highly specialized automation field. Buhr engineers explain that in many building block transfer lines, simply changing workholding fixtures and multiple-spindle heads will convert production from one part to another. For more radical changes, the line can be disassembled into its standard components and reassembled into new designs, with or without adding or replacing components or subassemblies.

They point out, too, that by standardizing on tested components some problems inherent in original machine designs are avoided. Instead, design and development is channeled into betterment of individual components. Greater effort can then be given to putting them together in ways that will solve special problems in each application.

Problems of one design stage, moreover, are divorced from solutions of the other. Emphasis is on practical aspects; optimum production, simpler operation and maintenance.

COMPACT STORAGE: Drawers store tools and parts neatly with little loss of space. Drawer depths vary.

Modular Units Pack More Tools

Cluttered shelves and bins add to inefficiency. Finding small parts gets annoying and time consuming.

Modular units allow orderly storage and place parts within easy reach.

▪ Efficient parts storage in a tool crib adds to smooth plant operation. Conventional shelving and cabinets either store a great deal of air or so crowd and clutter the space that finding tools or parts becomes time consuming.

A system to overcome these difficulties was recently installed in the tool crib at Volkert Stampings, Queens Village, N. Y. The firm was able, by converting the entire crib to the system, to double their storage capacity without increasing the floor space used.

Units Interchange—Based on the modular concept, the system uses interchangeable metal storage cabinets to store parts and equipment in such a way that all items are easily found. At the same time, inventory is simplified.

Cabinets, or housings, come in a variety of heights varying from bench height to 10 ft. Drawers, fitting the housings interchangeably, have several depths. The units are built up from these components to suit specific requirements.

The drawers, which can be divided into compartments, allow orderly storage. The various depths eliminate the need for stacking parts in the drawer to make best use of space.

Parts Protected — Stored parts are protected from dust and dirt. A system that locks all drawers in a bank of cabinets with a single lever provides security.

Individual drawers will hold up to 400 lb of parts. Ball bearings on the drawer carriage frame permit easy opening of the drawer to its full depth even when loaded.

To help find parts, each drawer pull carries a label across its entire length. Compartments within the drawer can also be marked to identify the contents.

Vidmar, Inc., makes these modular storage units in its recently opened Williamsport, Pa., plant.

Spread Out Storage to Cut Supply Bottleneck

If you have the outside space available, it's to your advantage to spread out storage.

There's one provision: You need good materials handling.

A mobile crane turns out to be the payoff in one instance.

▪ It would seem that spread-out storage would be good for organizing and keeping track of materials, but rough on handling. Choose the proper handling system then, and you stand to get double benefits.

That's what one company has done by converting 2000 sq ft of inplant storage space to production. The company has spread storage into unused areas around the plant. The key to success is a self-propelled Austin-Western hydraulic crane.

NO STORAGE HERE: What used to be storage is now the transfer point for materials in transit to production machines.

Speeds Unloading — The firm, The Superior Tube Co., Norristown, Pa., has lopped off 62 pct of the time formerly required to unload and store an average-size rail shipment of seamless tubing billets. Truck loads of coil strip are likewise handled with savings of 28 manhr per load.

A further advantage in spreading out the storage area is that there's no mixing of materials. Raw materials can be placed in storage faster, inventoried more easily and accurately, and picked up more quickly for delivery to production machines.

The rack area and overhead crane that were formerly used for storage are still used, but now the area serves as a marshalling yard where material is brought just before being processed into tubing. There's no longer any need for unloading supply trucks at the racks.

Wide Range of Stock—Tubing is made from 120 different alloys, about half of which are kept in stock in a wide range of sizes at the plant. The remaining alloys are ordered as needed from supplier's mills.

The amount of each alloy received at the plant varies from a few pounds to many tons. Whether the material is stored in quantity at the plant or ordered as needed, all incoming raw material must be unloaded, stored until needed, then moved on schedule to production machines.

Need Acreage—With fast crane handling, raw materials are stored

in groups according to analysis and size. Although the spreading requires a much larger storage area than was needed previously, Superior, with its 100-acre site, has space to spare.

Under the old method of handling, steel billets were shipped in by rail with 1¼-mile truck transfer. A truck crane, owned by a local contractor, was hired at $60 a day each time a shipment of billets came in.

The truck crane unloaded the billets from the railroad cars, carried them to the plant and stored them within reach of the overhead crane. The job usually took a full day for one gondola, and about 40 manhr to unload and store a complete shipment.

Time Savings—Now, billets are brought by trailer truck directly from the supplier's mills to the plant. The mobile crane and two men can unload a truck trailer in 3 hours. The average rail shipment of billets can be unloaded and stored in just 15 manhr.

The mobility of the crane permits storing incoming billets anywhere in the yard. When the material is needed for production, the unit is on hand to move the billets into the range of the overhead crane serving the production machines.

Coiled strip used to be stored inside the plant in a 2000 sq ft area. The coiled strip, usually shipped in by truck, was formerly unloaded by hand. It took a six-man crew 5 to 6 hours to handle the 30-ton truckloads, each pallet carrying about 6000 lb.

It now takes two men with the crane about 1 hour per truck for outside storage. As coils are needed, the crane picks them up and thrusts them inside the building where they are dollied into place under an overhead crane.

Telescoping Boom—The crane's hydraulically operated telescoping boom has a maximum horizontal extension of 30 ft. The crane can reach into truck trailers, shop areas, and locations where there is low overhead clearance. The unit picks up or places material without assistance from other equipment.

Material to be stored or picked up from confined places can be reached easily by employing the crane's front and rear end steer and the boom's turntable which rotates through a 270° arc and elevates 66°. When the driver's cab is not installed, the boom revolves completely through a full circle in either direction from any point.

Can Ride Highways—A gasoline engine powers both the crane and chassis. Lights and directional signals permit the crane to be operated on highways, a feature frequently used at Superior when the crane is driven to a subsidiary plant about 6 miles from the main plant. The fully enclosed cab is complete with heater and defroster.

All kinds of odd jobs involving the lifting, carrying and placing of equipment and supplies are handled by the crane when it is not otherwise in use. It's used for replacing tarpaulins on truck trailers, a time-consuming task if done by hand.

The crane prevents demurrage charges by unloading carriers' trucks in less than half the time previously required.

FAST UNLOADING: Telescoping boom of self-propelled crane reaches over trailer for easy unloading of incoming stock.

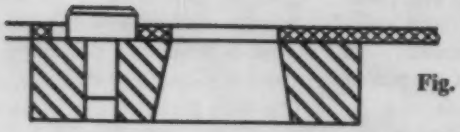


Fig. 1

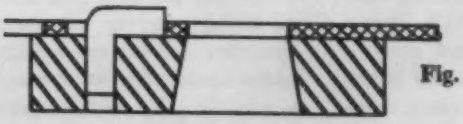


Fig. 2

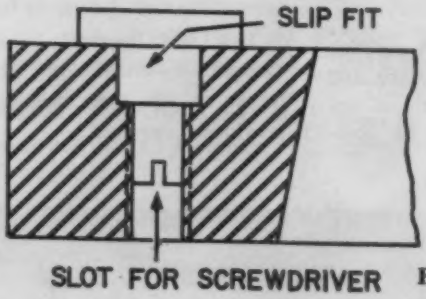


Fig. 4

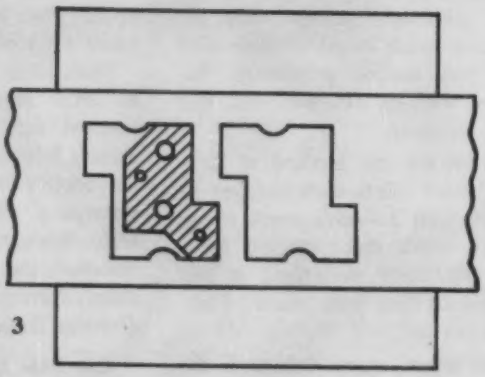


Fig. 3

MANUAL STOPS EFFECTIVE: Eccentric-headed stop pin (Fig. 1) and bent type (Fig. 2) are handy for short runs. Shaped stop (Fig. 3) is often used for heavy stock. As Fig. 4 shows, stop pins of any type should be easy to remove.

Blanking Dies: Which Stop to Use?

By Federico Strasser—
Consultant,
Santiago, Chile

The choice of an efficient stop for a blanking die depends on several factors.

Manual, semiautomatic and fully automatic stops all fit into modern practice.

Here are facts and design sketches to aid your decision.

▪ Every blanking die needs some type of "stop" device to insure: (1) Accurate endwise location of the strip stock with respect to the die openings; (2) uniform spacing of the strip as it advances.

There are three basic stop systems: manual, semiautomatic, and fully automatic. Manual stops are fixed; semi and fully automatic types are movable. Movable stops are usually operated by movement of the press ram (through some device on the punch holder), or by the blanked openings in the strip itself.

What Governs Choice? — The choice of a stop for any job depends on several factors: blanking speed, total quantity of blanks to be made, stock thickness, blank size, and the form of the stock material.

Manual and seimautomatic stops are used on low-production jobs where the press makes one stroke at a time. Fully automatic stops are used where the press runs continuously on coiled strip material.

Either manual or fully automatic stops are preferred for comparatively thin stock. However, fully automatic types are also used for thick material, as are the semiautomatic devices. Any of the three types of stops may be used for large workpieces, but semiautomatic and fully automatic devices are preferred for smaller stampings with irregular contours.

Pin Is Simplest — The simplest manual stop is nothing more than a fixed pin which projects slightly above the die plate surface. It prevents endwise movement of the strip by making contact with the inner side of the last blanking aperture that has been made. But if the locating hole for the stop pin is too near the blanking aperture, there is danger of cracking the die plate during heat treatment.

A bit more expensive, but usually preferred for better dies, are two other types of stop pins. One is a headed pin, such as the eccentric version shown in Fig. 1, which al-

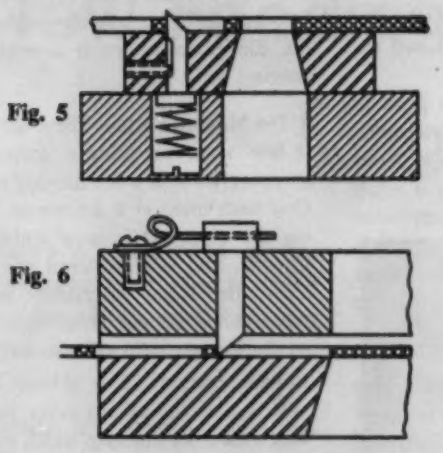


Fig. 5

Fig. 6

SAVE STRIP LIFTING: Semiautomatic stop (Fig. 5) is actuated by a spring in the die plate. Stripper mounted type (Fig. 6) is often preferred because it is not affected by variations in die height.

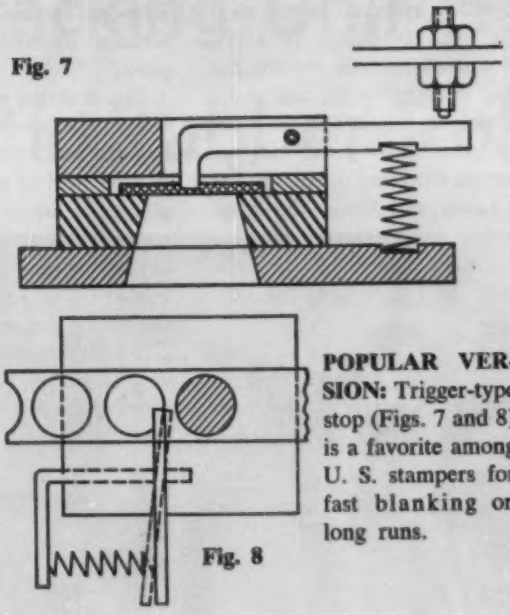


Fig. 7

Fig. 8

POPULAR VERSION: Trigger-type stop (Figs. 7 and 8) is a favorite among U. S. stampers for fast blanking on long runs.

lows small adjustments in the locating position.

In other cases, bent or hooked pins (Fig. 2) allow a more favorable location of the stop shaft. However, this type of stop can only be used with comparatively large blanking apertures.

If large blanks are to be made from heavy stock, an effective stop may be made by shaping a piece of hardened tool steel and fastening it to the die plate, Fig. 3.

Because stop pins are subject to considerable wear, it is best to harden them, and also provide for their easy removal when necessary. The pin of Fig. 4, for example, can be inserted or removed quite easily with a screwdriver.

Need No Lifting—With all fixed stops, however, the strip must be lifted over the device to advance it to the next blanking position. Semiautomatic stops overcome this by being movable. Thus, after each blanking action the strip pushes forward, and, as shown in Fig. 5, depresses the stop by pushing against its chamfered point. When the just-blanked aperture passes the stop, the latter snaps back up to its original position. The strip is pulled back slightly until the inner surface of the aperture contacts the stop.

Some toolmakers prefer to put the semiautomatic stop in the stripper instead of in the die plate. Thus any variations in die plate height (due to regrinding) do not affect the action of the stop. Fig. 6 shows an effective stop made from a round shaft with a slotted head. A piece of spring wire controls vertical travel and also keeps the stop from rotating.

Automatics Are Fastest — Still, for fastest production rates, fully automatic stops are the answer. On the average, they will allow a production rate about 1.5 times that attainable with manual stops, and about twice that achieved with semiautomatic devices.

There are several basic designs for automatic stops, but they all operate on the same principle: As the strip releases from the punch after each blanking stroke, it is simply pushed forward until it registers against the stop.

Basic designs for these stops fall into two groups. Those in the first group actually use a stop mechanism attached to the die. Designs in the second group usually add some extra cutting action to the blanking operation to aid the stop function.

Stampers Like This—The most popular automatic stop (especially in the U. S.) is the trigger type. In its simplest form (Figs. 7 and 8), it consists of a piece of flat steel pivoted around a pin set into the stripper. A tapered hole permits the stop to swing around the pin.

The internal end of the stop is bent downward. Pushed by a compression spring acting on the other lever arm, it rests on the die plate when the press ram is raised. A tension spring keeps the bent point of the trigger near the blanking opening. Sometimes the two springs are united in one.

When the strip is pushed against the stop, the latter moves away from the blanking opening slightly and registers the strip correctly. When the press ram comes down, an adjustable set screw on the punch holder actuates the trigger's external arm after the blanking punch passes through the stock. The bent point is lifted above the strip automatically.

Slides Over Stock—Due to the taper of the pivot hole and the action of the tension spring, the trigger

end abandons the innner wall of the last blanking aperture in the strip skeleton. In so doing, it slides over the stock surface toward the blanking opening in the die plate. The horizontal movement is about 0.04 in.

After the blanking operation, the punch raises and leaves the strip. As the strip moves forward, the bent point of the trigger snaps into the just-cut blank opening, and the cycle repeats.

Several other automatic stop designs work on the same principle as the common trigger stop. One such is the positive heel-and-toe-latch type shown in Figs. 9 and 10. It is a pivoted double-arm lever which is actuated by both the strip and the press.

Fig. 9 shows its position prior to blanking, with the strip against the forward end of the stop. The latter is itself held in position by a small plunger actuated by a compression spring. When the blanking action occurs, a screw in the punch holder pushes the far end of the stop to the position shown in Fig. 10.

When the press ram raises, the strip is pushed forward. The bridge between the last two blanking openings strikes against the stop heel and lifts it. This causes the forward end to come down against the surface of the die plate where it arrests the moving strip stock.

No Moving Parts—There are also a few ways to achieve automatic stopping without extra moving parts. One such method is known as "sizing the strip." It is used widely in Europe, and is considered the best technique when precision workpieces must be cut from light and medium gage strip of non-uniform width.

It makes use of an extra punch which narrows the strip width by the exact pitch (center) distance at each press stroke, Fig. 11. The strip is first pushed against a shoulder in the stock gage. At the instant blanking occurs, the strip width is reduced. Thus when the press ram raises, the strip again advances by an exact distance to push against the stock gage shoulder.

Eliminates Bridge—A very simple and inexpensive automatic stop often works well with ordinary stampings where some irregularity in outside contour doesn't matter, and the bridge between two blank openings can actually be eliminated.

One such is an ordinary eccentric-headed or hooked type of manual stop, which extends right to the cutting edge of the blanking aperture in the die plate. When the blank is removed from the strip, the lack of a bridge forces the strip skeleton to open up. The strip can then be pushed forward without lifting it over the stop.

Another stop can be made easily and inexpensively from a round punch with a drill rod core. The core represents the stop proper which registers the blanking openings in the strip skeleton. The punch cuts the web or bridge of the skeleton each time the press ram descends, thus allowing the strip to advance.

A supplementary shear blade which severs the strip skeleton at the edge of the die plate can also function as an automatic stop.

Fig. 9

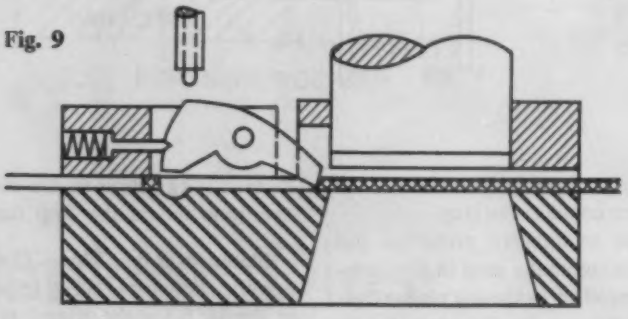
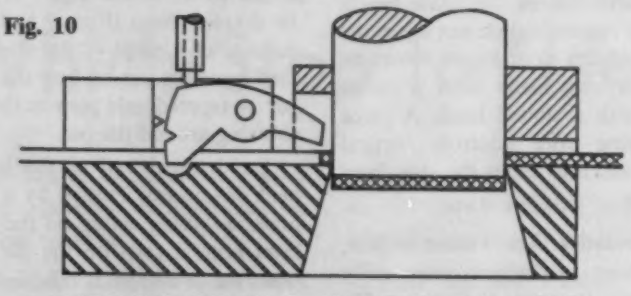


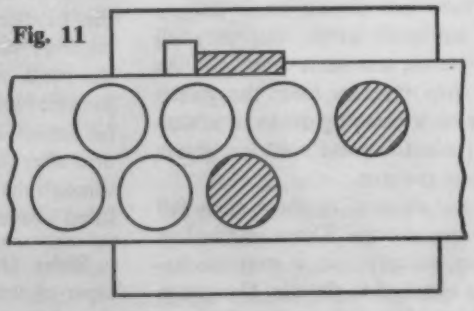
Fig. 10



APTLY NAMED: Heel-and-toe latch stop positions strip for blanking (Fig. 9), lifts for strip feed as blanking occurs, Fig. 10.

EUROPEAN STYLE: Blanking and edge punching occur at the same time. Strip moves ahead and stops when punched-out edge section makes contact with the shoulder of the stock gage.

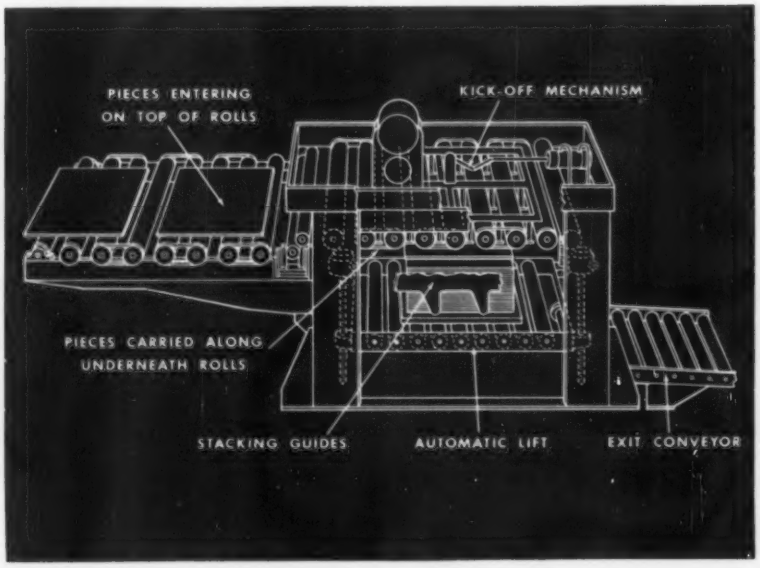
Fig. 11



New Feeding-Stacking Unit Has Magnetic-Rubber Rolls

Here's a novel twist in materials handling; rubber to which fine magnetic particles are added during compounding so it'll gently grip ferrous metals.

Today it's rolls on an automatic stacker; tomorrow it may mean some entirely new concepts in handling ferrous metals.



INSIDE STORY: Work enters the unit on top of the first set of rolls, then passes under (and is suspended from) a second set for stacking.

▪ Now it's magnetic rubber. A new elastomer-base material called Denmag acts like and has many of the properties of a magnet.

Denmag, introduced by the Herr Equipment Corp., Warren, O., is made by compounding neoprene or other rubber and plastic substances with various permanent magnetic materials of small particle size. It can be compounded to produce either strong or weak magnetic fields.

The magnetism can also be applied in a variety of patterns to facilitate handling and tracking. For instance, a roll can be treated so the magnet forms a straight or spiral pattern, with nonmagnetic sections between, so the pieces handled are tracked and guided properly to the next operation.

Doesn't Mar Work — Denmag provides a low density magnetic flux over a large area, rather than a high density magnetic flux concentrated in a limited area. In other words, it gives an even, gentle pull over a large area instead of an intense pull over a small area. The rubber has a soft surface, and so avoids possible damage or spoilage of the parts handled.

The new Herr automatic stacker and feeder, equipped with Denmag rolls, is one of the first applications of this new material. The unit is able to stack or feed any ferrous piece from 12 x 12 in. up to 36 x 48 in. and 0.030 in. thick.

It can handle any square, rectangular, circular, oval, elliptical, trapezoidal or other odd shaped piece, including those with spider-like legs or extensions. There's no drag. And since the unit doesn't employ pinch rolls, it won't scratch or mar surface finish.

Smooth Flow—For stacking, the pieces are carried along the top of the Denmag covered entry rolls. Then they pass along underneath the Denmag covered stacking rolls. Each piece is tapped lightly from above, just as it contacts the back plate, to release it from the magnetic field; then it drops a few inches between adjustable side guides and is stacked neatly on an automatic lowering platform for removal by lift truck or conveyor. Two or more machines can be mounted in tandem and interlocked to provide continuous operation.

One of the machines already in service is operating at roll feeds of 150 fpm, handling laminations with only a 3-in. gap between pieces.

Feeding is in reverse order. Each piece is lifted off the stack with vacuum cups and carried across the underside of the first set of Denmag covered rolls; then it goes across the top of the next set of rolls, and is guided accurately and automatically into the feeding mechanism for the next operation.

Because of its unusual properties and versatility, Denmag is expected to find many other applications soon. It opens up whole new areas of thought in the field of handling ferrous materials.

FURNACE MONITOR: Barnes panels allow operator to probe for the exact location of any trouble.

More Roller Bearings for Freight

More and more rail freight rides on sturdy roller bearings each year.

Eyeing this trend, Timken Roller Bearing Co., just built a $7 million plant.

It's about as automatic as they come these days.

▪ Mechanized to the hilt and capable of making 20,000 sets of freight car roller bearings each year. That's the Timken Roller Bearing Co.'s new $7,150,000 plant at Columbus, O., fully equipped to make five standard sizes of bearings for the nation's railroads.

Housed in two buildings that contain 200,000 sq ft of total floor space, the production line is split into three major units: green machining, heat treating, and grinding.

The raw material for bearing cups and cones is seamless, alloy steel tubing, ranging from 6 to 10 in. OD. A bank of National Acme single spindle automatics, each rigged with seven tools, turns, bores and cuts green races from this material. Another line of the company's Chuckmatics then machines the other end of each race.

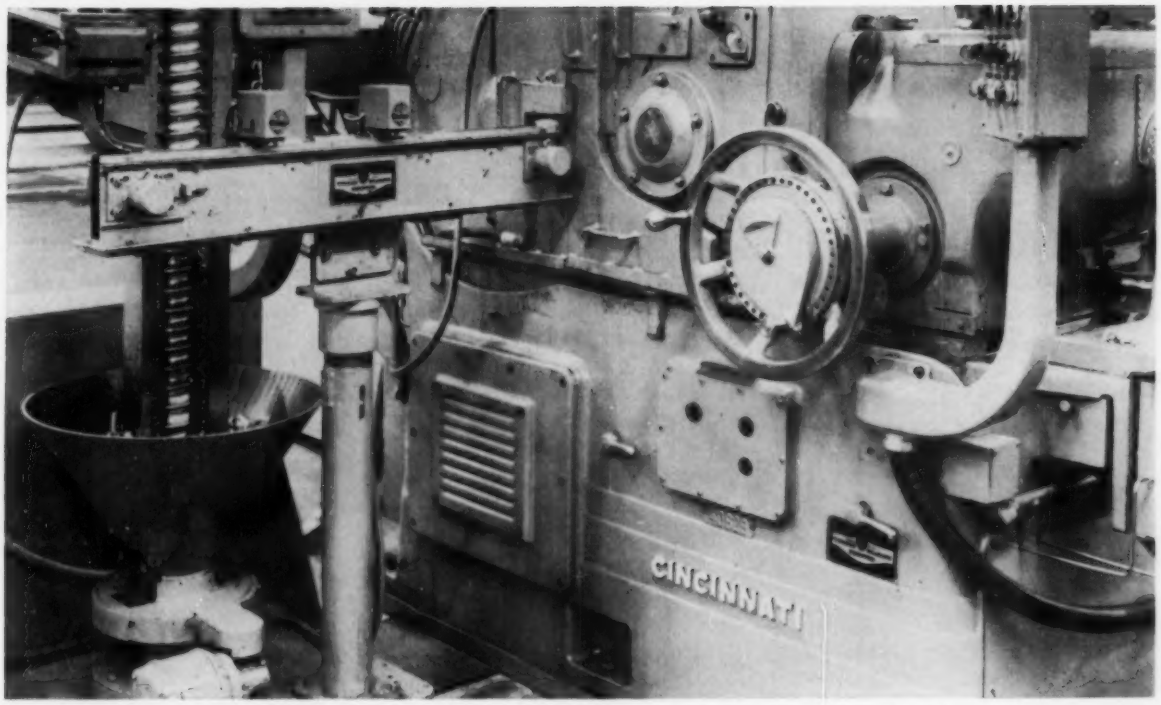
No Time Lost—Cutting speeds for these operations are from 400 to 475 fpm. Feed for turning and boring is 0.010 ipr. Cutting off is done at an 0.005 ipr feed rate. The coolant is a 6 pct soluble oil and water solution.

Heat treatment comes next for the green machined cups and cones. All equipment in this line — furnaces, quench presses, and handling devices—was designed and built by Surface Combustion Corp. All treating is done in controlled atmospheres; races are scale-free when they arrive at the grinding department.

Cup grinding takes eight operations; cone grinding needs only six. Each of the Cincinnati, Gardner, and Heald grinders used on these lines is equipped with an in-process control gage. Additional gages at each station are used by roving inspectors who make spot checks on quality control.

Conveyors Store Parts — Automatic conveyors do all the handling and positioning of cups and cones between grinding stations. They also provide a 30-minute storage loop between stations. A monitoring panel and a bank of overhead colored lights show at a glance how each station is operating.

Heat treated rollers also go



AROUND AND UP: Spiral conveyor lifts 38 rollers from hopper to grinder every minute machine operates.

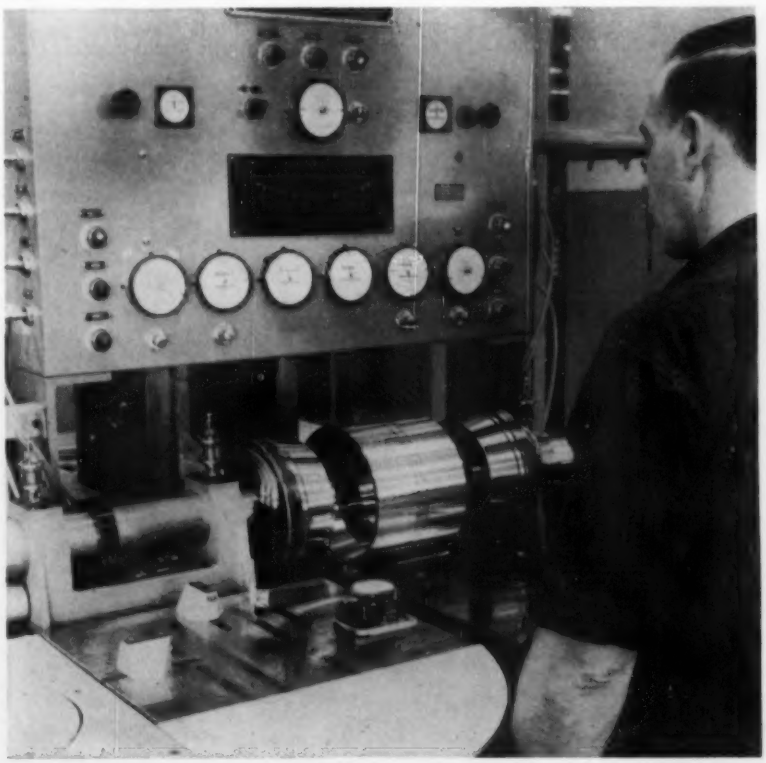
Cars

through a series of six automatic grinding operations en route to the final assembly area. They're kept in sequence for maximum uniformity in any one bearing.

Cones, rollers, and cages are assembled automatically and each self-contained unit is then run-in under load and given a final inspection.

Final assembly unites a cup, two cones, and a spacer which provides the right amount of lateral clearance. A metered amount of grease is added, and grease seals are pressed in. Seal wear rings, cone backing rings and axle end caps are banded to each assembly, which is then packed for shipment.

There is plenty of potential business to absorb the new plant's output. Timken officials estimate 2 million freight cars are without roller bearings, and thousands of new ones are built each year.



THREE CHECKS: Automatic air gage simultaneously checks stand, taper and counterbore diameters of each end of finished ground cup.

New Process for Regenerating Copper Etch Baths

Based on cupric chloride in the presence of excess chloride ions, it offers a number of important benefits.

Regeneration is continuous and goes on while etching is in progress. Electrical costs are low.

▪ A new way to continuously regenerate copper etching solutions has been developed by Bell Telephone Laboratories. The process eliminates downtime of equipment, does away with the dangers of handling corrosive spent etchants, and makes it possible to salvage the etched copper.

Etching solutions used in the new process are cupric chloride in the presence of excess chloride ions. They can be regenerated electrolytically while operations continue, either on a self-regulating basis or on a time cycle.

Electrical costs for regeneration are low. For instance, it takes about 20¢ worth of power to regenerate the solution used to etch 200 sq ft of 2 oz copper, assuming an efficiency of 50 pct in current rectification and an initial cost of 1¢ per kw-hr.

Several Sources of Excess—The new etching solutions dissolve copper because the chloride forms a more stable complex with cuprous than with cupric ions. Hydrochloric acid, sodium chloride, and ammonium chloride have all been tried as sources of excess chloride ions (in the absence of excess chloride, cuprous chloride forms a film on copper and inhibits further attack).

Hydrochloric acid-cupric chloride baths will etch copper more rapidly than ferric chloride etchants. Sodium chloride baths show about the same gains in etching time; they also have an increased capacity for dissolved copper—nearly 50 pct greater than hydrochloric acid baths. Still another advantage of sodium chloride baths is their low vapor pressure compared to hydrochloric acid baths, with a resulting lack of corrosive fumes. Some further benefits are indicated when ammonium chloride is used.

Shape and size of the cathode are important in electrolytic regeneration of the etchant. The normal reaction on electrolysis is for cuprous ions to be oxidized to cupric at the anode, but for cupric to be reduced to cuprous at the cathode, leaving no net reaction (this is due to the greater stability of the chloro-cuprous complex).

Forced Imbalance—If, however, the cathode area is decreased without any change in the current flow, current density at the cathode will increase. As current density increases, a point is reached where the cupric ions are reduced to cuprous as fast as they reach the cathode surface. A second electrode reaction must then take place, and this is the reduction of cuprous ion to metallic copper.

At some suitably high current density, all the cupric and cuprous ions which diffuse to the cathode surface will be reduced to copper. This gives a net reaction of the oxidation of one part cuprous ion to cupric, and the reduction of an equal part of cuprous to copper. This is simply the reverse of the etching process, and thus regenerates the etching bath.

FINISHED SAMPLE: Drs. P. D. Garn and L. H. Sharpe, who developed the new solutions, examine a wiring board etched by their method.

FREE TECHNICAL LITERATURE

New Catalogues And Bulletins

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 145.

Solvent Cleaner

Rapid, cold cleaning of all metals to remove heavy oil films and solid dirt is accomplished by a new emulsion cleaner. Described in new literature, this gold-colored liquid comes in ready-to-use form or as a concentrate. (Enthone, Inc.)

For free copy circle No. 1 on postcard, p. 145

Electrolytic Grinders

Shown in a new catalog are electrolytic carbine tool grinders. Both chip breaker and cup wheel grinders are described. So are new vises and grinding fixtures for fast regrinding or throw-aways and inserts. (Hammond Machinery Builders, Inc.)

For free copy circle No. 2 on postcard, p. 145

Metal Joining

Containing 28 pages, a new book can be used for self-instruction, in-class, or on-the-job training in metals joinery. It contains illustrated data for brazing shapes, sheet, castings, tubing and assemblies of copper, brass, steel, aluminum, and cast iron. (All-State Welding Alloys Co., Inc.)

For free copy circle No. 3 on postcard, p. 145

Fastener Drivers

Power screw driver ¼-in. hex drive bits for clotted screws are described in a catalog supplement. These new bits, extensively used in power screw drivers with non-rotating finders, are available in two grades of hardness for case hardened or soft screws. (Magna Driver Corp.)

For free copy circle No. 4 on postcard, p. 145

Dial-type Millers

Dial-type milling machines get complete coverage in a 46-page booklet. It covers plain, universal and vertical millers. (Cincinnati Milling Machine Co.)

For free copy circle No. 5 on postcard, p. 145

Closed-circuit TV

Low-cost closed circuit television cameras are illustrated in a 4-page bulletin. It tells how such inexpensive cameras can aid materials handling, assembly, automatic processing, etc. (Industrial Electronics Div., General Electric Co.)

For free copy circle No. 6 on postcard, p. 145

Power Distribution

A 16-page publication contains data on a new dry-type integral distribution center for industrial plants and warehouses. (General Electric Co.)

For free copy circle No. 7 on postcard, p. 145

Beta-ray Spectrometer

A technical report describes an improved version of an iron-jacketed, intermediate image beta-ray spectrometer. A fundamental tool of nuclear spectroscopy, this unit measures energy distribution of beta particles; the energy of conversion electrons; and the energy of photoelectrons. (For free copy write on

company letterhead to Tracerlab, Inc., Technical Publications Dept., 1601 Trapelo Rd., Waltham 54, Mass.)

Vacuum Arc Furnaces

Vacuum arc furnaces appear in an 8-page publication. It emphasizes savings in cost and space, reduced maintenance and manufacturing quality made possible by vaccum-arc melting as a production technique. (General Electric Co.)

For free copy circle No. 8 on postcard, p. 145

Flame Hardening

Flame-hardened rolls are subjects of a 6-page folder. It contains an engineering chart with ranges for hardness and depth usually required in rolls. Rolls up to 60,000 lbs, 33-ft long and 54 in. in diam, or for that matter any roll that can be shipped over the highway or on a freight car can be readily flame hardened. (Detroit Flame Hardening Co.)

For free copy circle No. 9 on postcard, p. 145

Magnets

Stock permanent magnets, magnetizers, and demagnetizers are presented in a catalog. It lists more than 70 cast Alnico-V magnets and over 30 sintered Alnico-II magnets. (The Indiana Steel Products Co.)

For free copy circle No. 10 on postcard, p. 145

Coolant System

Descripture literature deals with a new high-pressure coolant system. Used with carbide tipped gundrilling setups, it has a 14-gal oil capacity. A choice of motors delivers 10 gph (5 hp) or 20 gph (10 hp). Pressures adjust to 1000 psi. (Edlund Machinery Co.)

For free copy circle No. 11 on postcard, p. 145

Portable Welder

Power anywhere, anytime for welding, driving power tools, lighting and other jobs is supplied by a new portable welder. This compact

FREE LITERATURE

alternating-current unit produces 20 to 200 amps, 67-v open duty voltage for welding. It'll generate 140/280 volts for power outlets at no load speeds of 2140 rpm or 115/230 at 1925 rpm. (Lincoln Electric Co.)

For free copy circle No. 12 on postcard, p. 145

Vacuum Switches

New stripped-model pressure and vacuum switches are announced in a producer's literature. Designed specifically for use where controls are enclosed in a common cabinet, these feature the same accuracy and operating characteristics as the maker's widely accepted housed diaphragm switch models. (Barksdale Valves)

For free copy circle No. 13 on postcard, p. 145

Electronic Controls

Electronic controls of various types are discussed in a 16-page brochure. It introduces one manufacturer's facilities for developing and producing electronic controls, test and data processing equipment using a "systems" approach. (Stromberg-Carlson Co.)

For free copy circle No. 14 on postcard, p. 145

Sponge Iron

Sponge iron melting stock described in a 4-page bulletin has been reduced from ore at relatively low temperatures. Thus, melting of iron and gangue constituents never takes place. Of uniform analysis, it's recommended for melting. (Hoeganaes Sponge Iron Corp.)

For free copy circle No. 15 on postcard, p. 145

Safety Glasses

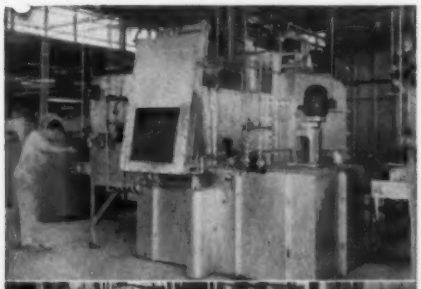
Eyeglasses that provide protection without making the wearer look unattractive appear in an 8-page catalog. It supplies important data on safety glasses of various types, taking into consideration both mechanical and human elements. (American Optical Co.)

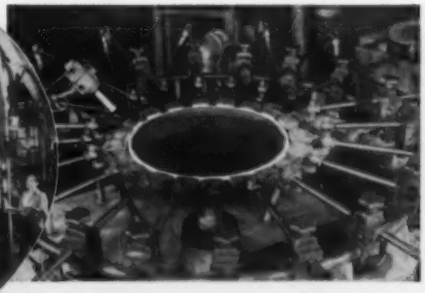
For free copy circle No. 16 on postcard, p. 145

WHEN IT COMES TO HEAT TREATING

"Do-It-Yourself" can sometimes be costly

Buying equipment and supplies to perform heat treating operations within your own plant is only one step in many that must be considered when contemplating the installation or expansion of a heat treating department.





Here are some of the factors that should be included when figuring the cost of operating your own heat treating department—of "doing-it-yourself" when it comes to heat treating:

- **Technical skill:** Trained operators whose skill is the result of years of experience are essential
- **Maintenance:** Rapid deterioration of equipment occurs unless there is constant repair, maintenance, and skillful handling of the equipment
- **Quality control:** Testing equipment and skilled operators are necessary to maintain uniformity and quality control of all heat treating operations
- **Sufficient equipment and supplies:** A great variety of equipment is needed to meet the requirements of annealing, brazing, hardening, carburizing, stress relieving, nitriding, and all other heat treating processes; and an endless variety of materials and supplies must be kept on hand.

These problems and many more have been solved by commercial heat treaters. They have the answers because heat treating is their business.

Every MTI commercial heat treater listed here is a specialist with complete service facilities under one roof. Each one has the facilities, equipment, skill and experience which will enable him to meet your most exacting heat treating requirements.

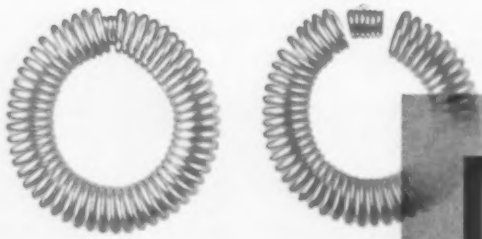
American Metal Treatment Co.
Elizabeth, New Jersey
Anderson Steel Treating Co.
Detroit, Michigan
Benedict-Miller, Inc.
Lyndhurst, New Jersey
Bennett Heat Treating Co., Inc.
Newark 3, New Jersey
Commercial Metal Treating, Inc.
Bridgeport, Conn.
Cook Heat Treating Co. of Texas
Houston 11, Texas
The Dayton Forging & Heat Treating Co.
Dayton 3, Ohio
Dominy Heat Treating Corp.
Dallas, Texas
Drever Company
Philadelphia 33, Pennsylvania
Greenman Steel Treating Company
Worcester 5, Massachusetts
Fred Heinzelman & Sons
New York 12, New York

MTI
MAINTAINED
METAL TREATING INSTITUTE

Alfred Heller Heat Treating Co.
New York 38, New York
Hollywood Heat Treating Co.
Los Angeles 38, California
Ipsenlab of Canada, Ltd.
Toronto, Ontario, Canada
Ipsenlab of Rockford, Inc.
Rockford, Illinois
L-R Heat Treating Company
Newark, New Jersey
The Lakeside Steel Improvement Co.
Cleveland 14, Ohio
Metallurgical, Inc.
Minneapolis 14, Minnesota
Metallurgical, Inc.
Kansas City 8, Missouri

New England Metallurgical Corp.
South Boston 27, Massachusetts
Owego Heat Treat, Inc.
Apalachin, New York
Paulo Products Company
St. Louis 10, Missouri
Pittsburgh Commercial Heat Treating Co.
Pittsburgh 1, Pennsylvania
Pittsburgh Metal Processing Co., Inc.
Pittsburgh 15, Pennsylvania
The Queen City Steel Treating Co.
Cincinnati 25, Ohio
J. W. Rex Company
Lansdale, Pennsylvania
Stanley P. Rockwell Company
Hartford 12, Connecticut
Scott & Son, Inc.
Rock Island, Illinois
Syracuse Heat Treating Corp.
Syracuse, New York
Temperature Processing Co.
North Arlington, New Jersey

How a change in spring design can reduce cost and improve performance.



FIRST DESIGN

IMPROVED DESIGN

In the original conception of this switch retaining spring, an extension spring was formed into a garter spring by inserting a small plug in the form of a spring into the two ends. Assembly operation proved difficult and costly.

In the redesigned spring, one end is reduced in diameter and inserted into other end, eliminating the spring plug and providing stronger unit.

Early consultation with our spring specialists, following the determination of fundamental performance characteristics, is often insurance against unnecessarily complicated manufacture. Write for pamphlet "How to solve your spring problems." Gives case histories and valuable design considerations for various types of springs.

Associated Spring Corporation

General Offices: Bristol, Connecticut

Wallace Barnes Division, Bristol, Conn. and Syracuse, N. Y.
B-G-R Division, Plymouth and Ann Arbor, Mich.
Seaboard Pacific Division, Gardena, Calif.
Cleveland Sales Office, Cleveland, Ohio
Raymond Manufacturing Division, Corry, Penna.
Ohio Division, Dayton, Ohio
F. N. Manross and Sons Division, Bristol, Conn.
San Francisco Sales Office, Saratoga, Calif.
William D. Gibson Division, Chicago 14, Ill.
Milwaukee Division, Milwaukee, Wis.
Dunbar Brothers Division, Bristol, Conn.
Wallace Barnes Steel Division, Bristol, Conn.

Canadian Subsidiary: The Wallace Barnes Co., Ltd., Hamilton, Ontario and Montreal, Quebec

8507

FREE LITERATURE

Continued

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

Wire Rope Hazard

Crushing, a common hazard to wire rope, is discussed in a 4-page folder. It describes all major causes of crushing, including overloading, quick starts, wrong sheave sizes, and actual mechanical crushing. Many suggestions are offered for recognizing these sources of wire rope troubles and for lessening or eliminating them altogether. (Leschen Wire Rope Div., H. K. Porter Company, Inc.)

For free copy circle No. 21 on postcard

Diamond Salvage

A 4-page booklet describes how an automotive manufacturer recovered $100 in reclaimed diamond dust for every $1000 he spends on diamond grinding wheels. The diamond collectors paid for themselves in 21 operating days. (Torit Mfg. Co.)

For free copy circle No. 22 on postcard

Stainless Fittings

Uses and advantages of one manufacturer's stainless steel fittings are discussed in an 8-page brochure. These fittings are designed to permit piping engineers to take full advantage of new, economical light wall tubing. However, fittings are furnished for both OD tube and IPS sizes. (Vanton Pump & Equipment Co.)

For free copy circle No. 23 on postcard

Resistance Welding

Resistance welding machines and their "special" applications are described in a bulletin. Its pictorial format shows how resistance welding techniques adapt to meet unusual fabricating requirements on a wide range of products—from toys to railroad cars. (Sciaky Bros., Inc.)

For free copy circle No. 24 on postcard

Universal Grinder

Photographs and sketches in a 24-page catalog illustrate a 10-in. universal grinder. They show what this grinder can do and picture many exclusive features. (Landis Tool Co.)

For free copy circle No. 25 on postcard

Abrasive-belt Units

Abrasive belt flat finishing machines are covered in a bulletin. Flat work can be done with ease on these single and multi-head machines. Heads accommodate 6, 8, 10 and 12 in. wide belts. (Hammond Machinery Builders, Inc.)

For free copy circle No. 26 on postcard

Tooling Plastics

Tooling plastics and their uses are discussed in a 4-page bulletin. It describes the use of epoxy resins in aircraft, automotive, machine shop, metal trades, ceramics, marine and other related fields. (Furane Plastics, Inc.)

For free copy circle No. 27 on postcard

Special Fasteners

Specifications, engineering drawings, applications and installation information is provided in a 40-page fastener catalog. Data is given on many special fasteners. (Simmons Fastener Corp.)

For free copy circle No. 28 on postcard

Gear Generators

Gear generators are featured in a 32-page bulletin. It contains specifications and information on machines for generating gears of all types which operate on parallel axes. (Farrel-Birmingham Co., Inc.)

For free copy circle No. 29 on postcard

Mesh Heat Elements

Wire mesh heating elements are introduced in a 4-page bulletin.

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. **5/22/58**

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POSTAGE WILL BE PAID BY

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51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70

If you want more details on products advertised in this issue fill in below:

Page .....Product .....

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Your Name

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Company

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FREE LITERATURE

These offer a new approach to surface type electrical heating elements. There are 36 wires carrying current per inch of heater width, or a heat source every 0.028 in. (Electrofilm, Inc.)

For free copy circle No. 30 on postcard

Flame Cutter

Features of a flame cutting machine are discussed in a 16-page catalog. It deals with design and performance features of this multiple-torch model. (Air Reduction Sales Co.)

For free copy circle No. 31 on postcard

Gage Blocks

Low priced, grade A gage blocks are drescribed in a catalog sheet. These blocks are accurate to within +0.000006, —0.000002 in. of nominal sizes. prices are low enough to permit their use as working gages. (The DoALL Co.)

For free copy circle No. 32 on postcard

High-heat Bearings

Design requirements for anti-friction bearings of unusual shapes and sizes are contained in a bulletin. It gives current information on suitable bearing component materials for high temperatures, corrosion resistance, non-magnetic properties. (Industrial Tectonics, Inc.)

For free copy circle No. 33 on postcard

Automated Unit

Tape controlled drilling, tapping, and boring machines are described in a bulletin. It explains how to mark up a blue print, program a part, punch the tape and put the work on the machine. (Burg Tool Mfg. Co.)

For free copy circle No. 34 on postcard

High-speed Drills

Of special cobalt high speed steels, new drills are designed for tough drilling applications. They serve where it is not possible to use conventional high speed drills due to red heat, where high speed drills anneal. A folder gives details. (Chicago-Latrobe).

For free copy circle No. 35 on postcard

Fire Protection

Protecting your plant against damage by fire is the reason for a new brochure. It points out how your company can do a complete job of protecting against fire loss. (Ansul Chemical Co.)

For free copy circle No. 36 on postcard

Forging, Extrusion

A scale-free method of direct-fired heating as applied to forging and extrusion temperatures under full automatic control of both temperature and atmosphere is presented in a folder. (Drever Co.)

For free copy circle No. 37 on postcard

Aluminum Paints

Why aluminum and aluminum graphite paints give high protective service on steel, galvanized iron, tin plate and other hard-used surfaces is told in a 4-page brochure. Chips which show actual colors of different aluminum formulations. (Joseph Dixon Crucible Co.)

For free copy circle No. 38 on postcard

Load Measuring

Concise information about electronic indicators and recorders for precise measurement of pressure, force, tension and weight using load-cells appears in a 4-page bulletin. (Leeds & Northrup Co.)

For free copy circle No. 39 on postcard

Industrial Ovens

Industrial oven systems are described in a 4-page brochure. These include: laboratory size mechanical recirculating utility ovens; 800°F high-temperature mechanical convection ovens with electronic control instrumentation and an exclusive proportioning system; and muffle furnaces with an electronic pyrometer. (Blue M Electric Co.)

For free copy circle No. 40 on postcard

ALLEN-BRADLEY

new

BULLETIN 350 reversing drum switch

Styled by Brooks Stevens, internationally famous industrial designer.

- *MODERN IN APPEARANCE*
- *AVAILABLE AS OILTIGHT— FOR CAVITY MOUNTING*
- *EASY TO MOUNT*
- *EASIER TO WIRE*
- *INSTANT CHANGEOVER FROM MAINTAINED TO MOMENTARY CONTACTS*

A-B QUALITY

ALLEN-BRADLEY

MOTOR CONTROL

QUALITY

Allen-Bradley Co., 1316 S. Second St., Milwaukee 4, Wis.
In Canada—Allen-Bradley Canada Ltd., Galt, Ont.

6-58-MR

A new "quality" standard for small REVERSING DRUM SWITCHES

A-B QUALITY

GOOD-LOOKING AND GOOD "FEELING" DIE CAST HANDLE

EASILY ACCESSIBLE MOUNTING HOLES

MERELY LOOSEN SCREW AND SLIDE PLATE to change from momentary to maintained contacts —or vice versa

INDEPENDENT SWITCH MOUNTING prevents misalignment

HEAVY CONTACT SURFACES for long operating life

TWO CONDUIT OPENINGS

WRAP-AROUND COVER gives complete access to drum

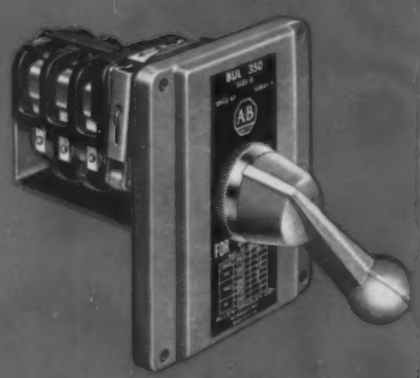
SINGLE SCREW COVER MOUNTING —screw cannot fall out

ACCESSIBLE SCREW TERMINALS for front wiring

RAISED EDGE for base mounting without spacers

maximum rating 2 horsepower

NEW OILTIGHT COVER PLATE FOR CAVITY MOUNTING



Bulletin 350 Reversing Switch can be furnished with oiltight cover plate with rubber gasket seal for cavity mounting in a machine base.

This *all-new* Allen-Bradley reversing drum switch was designed to keep pace with the mechanical beauty designed into so many of the modern machine tools.

The Bulletin 350 reversing switch is equivalent to a three-pole, double throw switch . . . and can be used with d-c motors; or single phase, two phase, or three phase a-c motors.

Investigate the Bulletin 350 . . . the *new leader* of its class . . . in appearance, ease of installation, and operating life. An Allen-Bradley *quality* switch . . . in every sense of the word. Send for descriptive bulletin.

ALLEN-BRADLEY

MOTOR CONTROL

QUALITY

Allen-Bradley Co., 1316 S. Second St., Milwaukee 4, Wis.
In Canada—Allen-Bradley Canada Ltd., Galt, Ont.

6-58-MR

WELDMENT SERVICE

Subcontract this part of your production profitably ...confidently

Now you can employ the nationally known facilities, experience and craftsmanship of The Morgan Engineering Company to produce components for *your* products. Whether you require quantities of small precision weldments or parts weighing up to 80 tons, you can subcontract this part of your production profitably . . . confidently.

Facilities include a complete line of positioning and automatic welding equipment . . . a 20 x 18 x 52 foot stress-relieving furnace . . . modern shot blast equipment and a wide range of machine shop facilities.

Inspection of the Morgan plant is welcomed. Write, wire or phone for complete data on facilities . . . or ask a Morgan sales engineer to call.

THE MORGAN ENGINEERING CO. *Alliance, Ohio*

Overhead electric traveling cranes, gantry cranes, open hearth special cranes, plate mills, blooming mills, structural mills, shears, saws and auxiliary equipment.

Automated Unit Ups Annealing Quality

Getting the proper gas atmosphere for annealing sometimes offers problems. Improper gas mix can affect parts' finish.

Using an automated gas analyzer, one annealing firm assures itself of constant, even mixtures.

▪ Automation in the form of an inert gas analyzer with a control mechanism solves an annealing furnace problem for a maker of copper and brass products.

Prior to installation of the instrument, the ratio of gases used in the annealing process was maintained by manual controls. The operator had to watch or spot check indicators. Quality of the atmosphere in the furnace often varied. Needless to say, this did not assure product uniformity.

Gases Are Problem—At C. G. Hussey Co., Pittsburgh, the product in its annealing process is heated to annealing temperature in an inert gas atmosphere. This atmosphere must be free of oxygen and low in hydrogen to prevent spoiling the product.

The atmosphere is manufactured, as needed, in an inert gas generator near the annealing furnaces. In this generator about 10 parts air and one part natural gas mix. This mixture burns; products of combustion are collected. There are the inert gas.

Mix Is Vital—The mixture of air and fuel must be accurately proportioned to produce inert gas of good quality. When too little fuel is used, the atmosphere is too lean. Dull, discolored copper results. When too much gas is used, an excess of hydrogen appears in the atmosphere. This blisters the copper surface.

The inert gas analyzer, manufactured by Mine Safety Appliances Co., Pittsburgh, continuously and automatically controls the atmosphere to close limits and records atmosphere quality.

Automatically, the analyzer controls and records gas mix.

A sample of the atmosphere is continually drawn into the instrument; when the mixture varies, the control mechanism is actuated by solenoids. This operates the proportioning valve to re-establish the desired atmosphere.

Want More Data?

You may secure additional information on any item briefed in this section by using the reply card on page 145. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

Metallurgy

New method allows fabricating of ductile molybdenum parts

Ductile molybdenum parts can now be fabricated via a new process. It makes possible fabricating such parts by powder metallurgy techniques or by conventional rolling and extrusion techniques.

Jointly patented by H. Gordon Poole of Colorado School of Mines, Golden, Colo., and J. S. Nachtman, a Washington consulting engineer, the new process directly reduces molybdenum sulfide concentrate with tin. The resulting molybdenum powder has a very low level of impurities such as oxygen, carbon, nitrogen or hydrogen.

Diecasting

Casting reduces weight and cost of retainer block

Even casters can cut costs by using castings. So discovers a large diecasting firm which finds that using a cast-to-shape retainer to hold automobile horn dies slashes its costs and reduces the retainer's weight.

Made from metal supplied by the Forging & Casting Div., Allegheny Ludlum Steel Corp., Pittsburgh, the retainer is now in use by Congress Die Casting Div., Tann Corp., Detroit. The item is cast of FC CMS, an oil or air-hardening steel most commonly provided in cast-to-shape form.

Weighs Less — The economical ($1200 less) cast-to-shape retainer weighs 600-lb less than the die block it replaced. This weighed 1250 lb. The cast substitute weighs only 650 lb, resulting in a cut in material costs amounting to more than $250.

Less steel at lower cost, however, is not the most economical feature of cast-to-shape retainers. The reduction of man hours required to completely machine the other block provides the built-in profit for the user of cast retainers.

Slashes Machine Time — Riehle Machine Co., Toledo, Ohio,

TECHNICAL BRIEFS

builders of the die, reported the elimination of 150 hours of costly machine time on the two halves of this die. Reduced costs resulted in over a $1000 savings to the die-casting organization.

A casting like that used by Congress has only ¼ to ⅜ in. of machine stock on all surfaces, requiring one roughing and one finishing operation.

Hardens Well — The metal was hardened and drawn to a hardness of 262 Brinell for the automobile horn die retainer. The steel hardens accurately, and gives superior performance in forming dies in the cast-to-shape form, where extra-

Operator removes diecast parts from machine's ejector block.

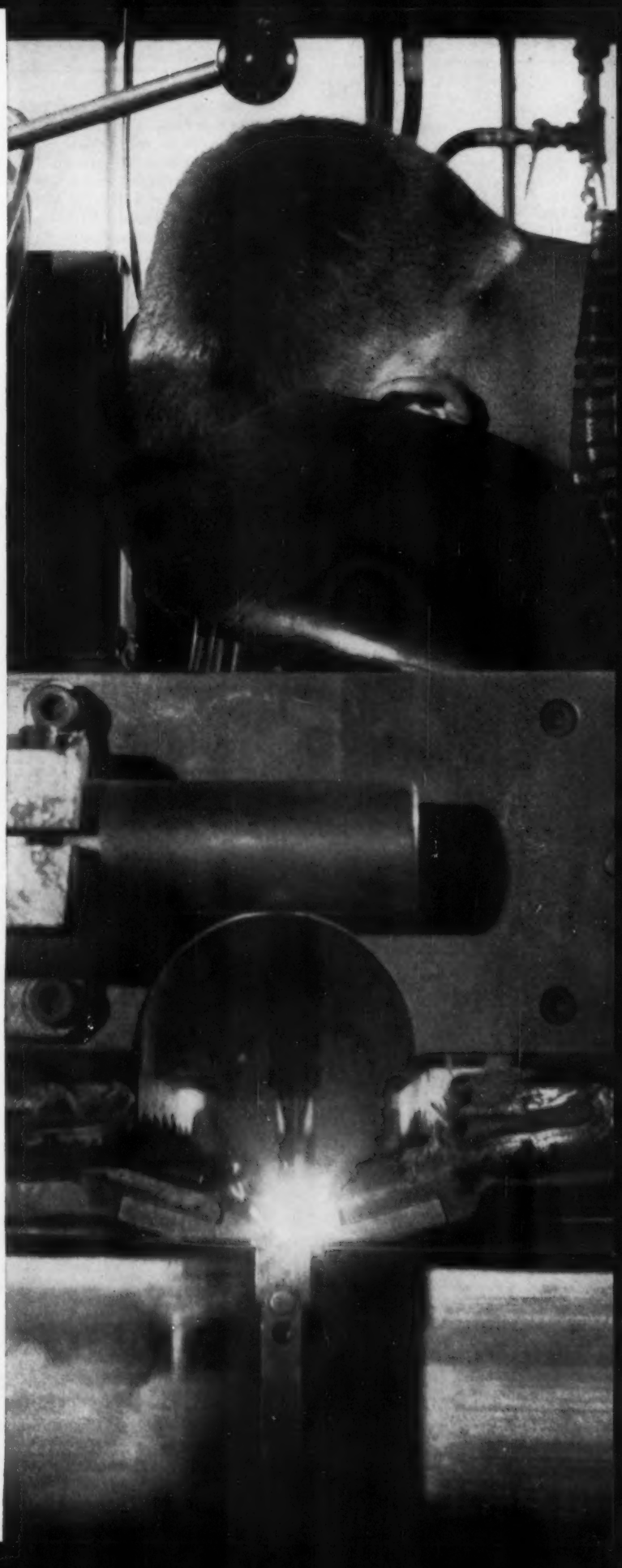
ordinary toughness is required. Despite the toughness and hardness, the metal is still machinable. No additional heat treatment is needed after machining.

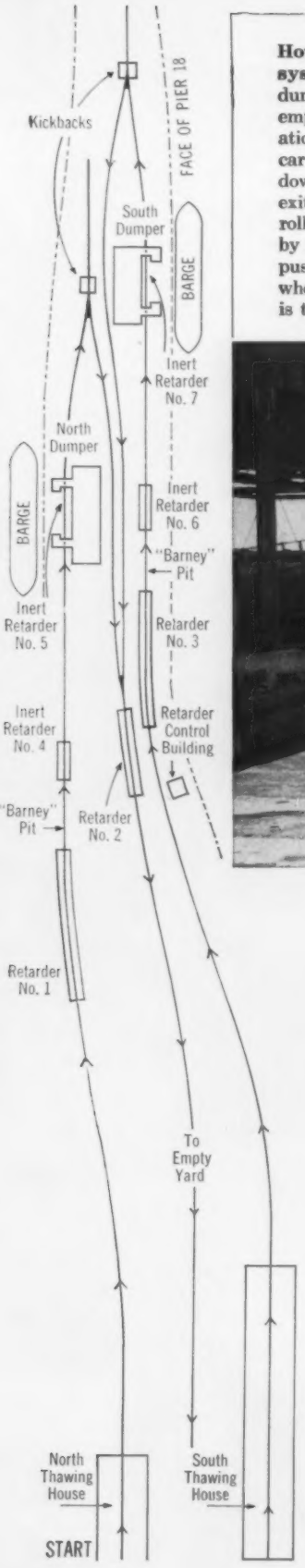
The CMS material is normally supplied pre-hardened to 241/269 Brinell or 255/277 Brinell. The hardness depends on the customer preference, severity of machining to be done, and the thickness of the section to be machined.

Handling

High-speed gas turbine powers crawler tractor

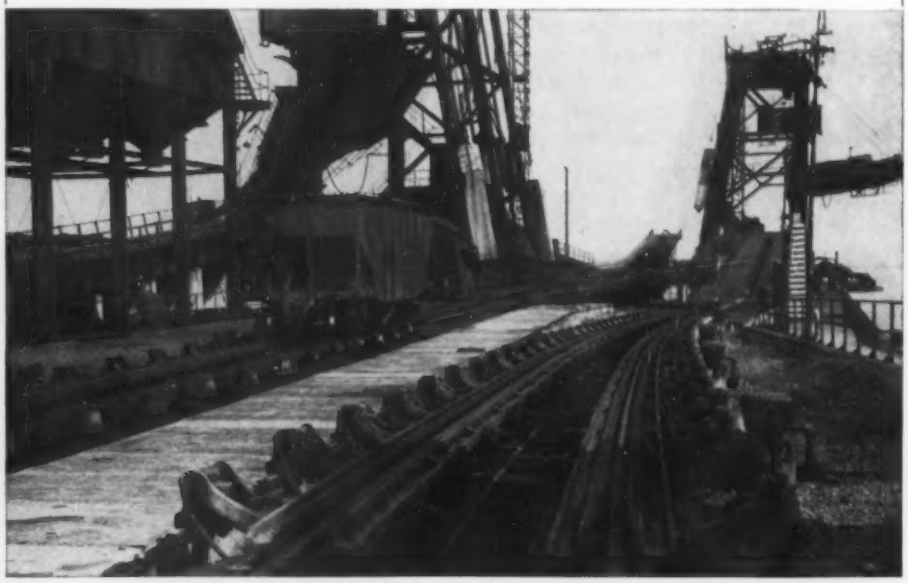
An experimental crawler tractor now under test uses a gas turbine engine in place of its diesel counter-





How the new UNION car-retarder system works — Pier 18 has two coal dumping systems and both use the same empty yard. Following through the operation of the North dumper, a loaded coal car leaves the North thawing house, rolls down an incline to retarder No. 1 where its exit speed is reduced, so that when the car rolls on to the "barney" pit, it is stopped by inert retarder No. 4. A "barney" then pushes the car up the slope to the dumper where it is stopped by retarder No. 5. Coal is then dumped into a barge.

The next full car pushes the empty car off the dumper. It goes by gravity through a kickback and spring-switch combination for return through retarder No. 2 to the empty yard. Controls for the power retarders and switches are incorporated in a control machine housed in a new tower building. One operator in this tower surveys the operation and operates the control machine. He has loudspeaker communication with the thawing sheds, the control cabins on the dumpers, and the yard office.



General view of North and South dumpers showing No. 2 and 3 retarders in foreground. Car entering retarder is going to the empty yard.

Fast, low-cost coal handling results from Automation at Pier 18

The Central Railroad of New Jersey recently modernized its coal dumping facilities at Pier 18, Jersey City, N. J. Now, one man sits in a tower, flicks a few levers, and controls loaded coal cars rolling by gravity to the dumpers and empty cars moving from the dumper to the empty yard. Formerly, this job required a crew of car riders and was a costly and hazardous operation.

Now, the job is handled quickly, safely and economically through a system of UNION Electro-Pneumatic Car Retarders. Operating costs have been greatly reduced, and coal is promptly loaded for shipment by barge to New York and New England areas.

What is your materials handling problem? If it involves many carloads of coal, ore or other products, let us show you what can be done with automatic car-retarder systems to increase efficiency and reduce costs. Write for information.

UNION SWITCH & SIGNAL
DIVISION OF WESTINGHOUSE AIR BRAKE COMPANY
SWISSVALE, PENNSYLVANIA
NEW YORK ..... PITTSBURGH ..... CHICAGO ..... SAN FRANCISCO

part. So far, inconclusive research indicate that the engine performs very well.

Inside the tractor's engine compartment, Allis Chalmers Mfg. Co., Milwaukee, which is trying the turbine, has placed a Boeing 502-10C gas turbine power unit. The company points out that this may well be an early research version of the crawler tractor of the future.

Noise Is Similar — Net horsepower equals the conventional diesel's, tests show. Exhaust gases are greater in volume than with the regular engine; however, researchers have devised a successful way to keep these from bothering the operator.

Noise level of the experimental unit is equal to the other, although pitch and character of the sound are different.

Fabrication

Sheet steel building designed for long life

Galvanized sheet steel panels provide the curtain wall construction of a new power plant building. Designed for at least 20 years of service before painting, the structure uses 20-gage sheet steel with a 2-oz. coating of zinc.

Workers with power hand shears cut the 100,000 sq ft of sheet.

The building, 220 x 120 ft with an average wall height of 66 ft, was fabricated and erected by H. H. Robertson Co., Ambridge, Pa., for St. Joseph Lead Co. near Monaca, Pa. Outside panels have vertical, rectangular flutes 2½-in. wide and 1½-in. deep on 6-in. centers.

Has Rigid Insulation — Between the outside and flat inside panels is a 1½ in. layer of rigid insulation. Builders placed this over the inside just before hanging the outside panels.

Forming operations on the zinc-coated sheet, furnished by Jones & Laughlin Steel Corp., Pittsburgh, include a 180° bend with a 1/16 in. radius on one edge to interlock the panels. Eighteen 90° longitudinal bends on 1/16 in. radius were made in the outside panels, many of which are 40 ft. long. All cutting and fitting was done on the job with a powered hand shear.

TECHNICAL BRIEFS

Maintenance:

Rubber-lined pipe reduces maintenance time 90 pct

Switching from heavier pipe to rubber-lined steel for handling abrasive materials not only doubles pipe life but also saves approximately 20 days a year in patching and turning the pipe. So find New Haven Railroad plant engineers.

The 300-ft long pipe carries a water slurry of fly-ash and cinders from mechanical and electronic dust collectors. This highly abrasive slurry quickly scoured holes in previously used pipe. To forestall trouble, this pipe was rotated ⅛th of a turn every three months, bringing a fresh surface to the bottom. Only a few sections of the heavy pipe could be turned at a time, requiring five days to complete the job.

Instead of a smokestack, this rubber-lined pipe handles soot.

Rubber Resists Wear—Steel pipe now in use was lined by American Hard Rubber Co., Butler, N. J. The lining is ¼-in. thick rubber compound especially developed for handling abrasive materials. According to the user, pipe serves nearly three years before turning is needed.

Light weight of the pipe also permits turning 200 ft at a time, completing the job in one day instead of five.

Welding

Two welding heads work at once, cut time 50 pct

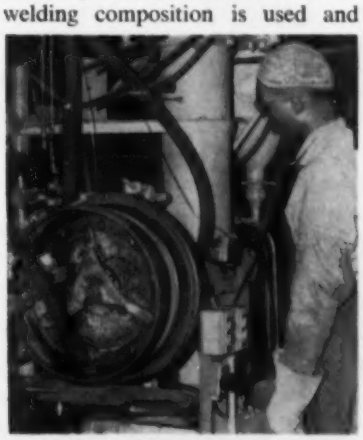
Two welding heads simultaneously join both sides of wheel assemblies for heavy earth-moving machines, cutting production time by more than 50 pct at Clark Equipment Co., Benton Harbor, Mich.

With this special installation, one operator completes about 60 wheels a day. This includes time for loading and unloading. High-quality welds are made in half the time required for one automatic welding head. Reposition of the workpiece is eliminated, too.

Cut Five At A Time—Wheel assemblies consist of pre-formed rims and shaped wheel disks. The 22-in. diam disks are flame-cut five at a time from ½-in. thick plates of SAE 1021 hot-rolled steel.

After a rim and disk are tack-welded together, the wheel assembly is mounted in the automatic welding fixture. One head swings outward to clear the fixture for loading.

Re-Uses Flux—The two Unionmelt heads, products of Linde Co., New York, each require a current of 400 amp., DCSP. They weld both sides simultaneously as the wheel assembly rotates. Unionmelt No. 50 welding composition is used and



Two heads weld both sides of this assembly simultaneously.

vacuum nozzles are positioned behind the heads to pick up unfused flux for re-use.

One wheel assembly for a tractor bulldozer, which uses 23.5-25 tires,

requires 70 in. of 3/16-in. thick fillet welds on each side. Both welds are made in a single pass; all welding is completed in less than three minutes.

Fastenings

Metrology laboratory helps untangle thread problems

Failure of fastenings to fit properly can cause trouble in any plant or shop. In many applications, there's no reason for irreliable fastenings. If you make use of modern equipment available for checking fasteners, you should have little or no problem with fasteners.

But the catch is this: What happens when you can't afford to buy and keep a room full of testing equipment on hand? Suppose your fastener assembly operations don't justify capital outlays for precision thread testing equipment? Fastener troubles still harass you, but to set up a huge installation would cost more than it's worth.

Here's The Answer — For such fastener users, there's a good answer. Standard Pressed Steel Co., Jenkintown, Pa., supplies it. This firm is making its extensive facilities available to all who suffer such

Metrologist checks pitch diameter of internal screw threads.

problems. It recently opened three metrology laboratories ready to service any firm that needs help with threaded fastener worries.

One laboratory is at its headquarters plant, Jenkintown; the second is operated at the Cleveland plant of subsidiary Cleveland Cap Screw Co. A third is run by SPS Western in Santa Ana, near Los Angeles.

Advanced Equipment—The three nearly identical units have available to precision industrial fastener users seeking its service more than $300,000 worth of advanced screw thread measuring equipment.

Cryogenics

After a year and a half of intensive testing, Lukens Steel Co. has introduced an extraordinary alloy steel. For use in temperatures so cold that ordinary steel plate cracks under a mere hammer blow, the new material displays high impact resistance plus high strength at temperatures down to —320°F.

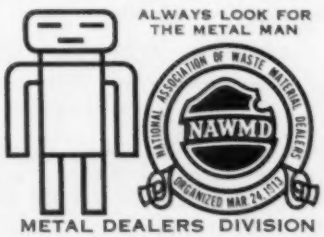
Your NAWMD dealer is the world's best pro

As a scrap generating or consuming firm, you'll find yourself hauling in consistently higher profits after consulting your NAWMD dealer. As an NAWMD member, he is a leader in his industry. He is better equipped than anyone else to aid you in every phase of the profitable recovery of non-ferrous metal scrap.

Added to his reliability and readiness to serve you, is the fact that NAWMD specifications are the accepted standard throughout the world. *For the best counsel on non-ferrous metal scrap problems, be sure to consult an NAWMD member dealer.*

NATIONAL ASSOCIATION OF WASTE MATERIAL DEALERS

271 MADISON AVE., NEW YORK, N. Y.



METAL DEALERS DIVISION

NEW BOOKS

"Nondestructive Testing" contains papers delivered at a symposium. Papers discuss the major nondestructive test methods; ultrasonics, magnetic particles, radiographic, penetrant, etc. What makes the volume particularly attractive are its suggestions and recommendations of certain practices. 99 pp. $2.75 per copy. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa.

"Titanium" includes papers on testing techniques and effects of various heat treatments on the metal and its alloys. It's the result of a symposium. 208 pp. $4.75 per copy. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa.

"Radioisotopes" can save your testing department some dollars. It tells how you may profit by using these by-products of nuclear fission as: (1) testing and inspection tools; (2) alterers of materials' physical properties. 100 pp. $2.75 per copy. ASTM, 1916 Race St., Philadelphia 3, Pa.

"Arc Welding Lessons for School & Farm Shop" is a textbook. It includes lessons of late methods and equipment. 343 pp. $1 per copy; $1.50 outside U. S. Lincoln Arc Welding Foundation, Cleveland 17, Ohio.

"Cold & Hot Heading" deals with small parts. It covers: processes, materials, design studies, and "ground rules" for designing items that can be made economically by heading. 95 pp. $2 per copy. Industrial Fasteners Institute, 1517 Terminal Tower, Cleveland 13, Ohio.

"Introduction To Copper" is a simple notebook on copper and its alloys. Excellent reading for students, apprentices, or beginning engineers, the book generally describes history, mining, fabrication and

When fabricators need good stainless plate fast, they're apt to ask for Jessop

To be more explicit, fabricators are apt to specify Jessop stainless steel plate for the following very good reasons: First of all, they don't have to wait in line for delivery. Jessop operates a compact, highly adaptable stainless plate department—all under one roof from melting to finishing. Schedules can be adjusted overnight to fill a rush order. And they get *good* plate. Jessop's advanced new chemical control equipment and techniques guarantee that. So if you are a fabricator and need good stainless plate fast, send your next order to Jessop. You'll be glad you did. Write for literature.

JESSOP

STEEL COMPANY, WASHINGTON, PA.

OFFICES IN PRINCIPAL CITIES

Wholly-owned Subsidiaries: Jessop Steel of Canada Limited, Wallaceburg, Toronto
Jessop Steel International Corp., Chrysler Building, New York, New York
Green River Steel Corporation, Owensboro, Kentucky

NEWS from American Chain:

ACCOLOY KUPLEX Sling Chains...

Fast assembly—quick delivery from your Kuplex distributor

The ACCOLOY KUPLEX is the first and only sling chain completely engineered as a unit that is quickly available in whole or in part from Authorized Distributors. Made up entirely of matched and engineered components, each part is designed and manufactured specifically for use with all other parts of the complete KUPLEX Sling assembly. It is a streamlined sling chain that greatly reduces the possibility of snagging on other objects.

All parts are made to ACCO *Registered* Specifications from heat treated ACCOLOY steel, and are engineered to be as strong as the chain itself. All are factory proof-tested to twice working load limits. Hooks and Kuplers are magnaflux-tested. These facts are covered in a CERTIFICATE OF TEST issued by ACCO and signed by the distributor with each complete sling purchase.

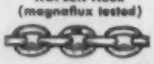
Fast Service from Distributors' Stocks • An ACCOLOY KUPLEX Sling gives you an assurance which is lacking when you use homemade slings of questionable reliability. It gives you new parts for worn or damaged slings without delay. Thanks to the fast service available through a nearby distributor, you can be assured of having the sling you need when you need it. This also means that your inventory investment in sling chains can be held to a minimum.

Write our York, Pa., office for the name of the Authorized KUPLEX Sling Chain Distributor nearest to you.

Accoloy Shaped Master Link

Accoloy KUPLEX Hook (magnaflux tested)

Accoloy Kupler (magnaflux tested)



Accoloy 123 Chain (X-weld or Endweldur)

SIX CHAIN SIZES FROM THESE FOUR COMPONENTS

• A nearby Authorized ACCOLOY KUPLEX Sling Distributor can furnish promptly from his stock the exact sling chains you need for your specific requirements; made up from the components shown above. Six chain sizes (¾" through 1⅛") are available in single, 2-leg, 3-leg or 4-leg styles.

American Chain Division

AMERICAN CHAIN & CABLE

Bridgeport, Conn. • Factories: *York and *Braddock, Pa.

Sales Offices: *Atlanta, Boston, *Chicago, *Denver, Detroit, *Houston, *Los Angeles, New York, Philadelphia, Pittsburgh, **Indicates Warehouse Stocks* *Portland, Ore., *San Francisco

ACCO

TRADE MARK

uses. 48 pp. Requests for a free copy may be made on letterhead to Copper Development Assn., 55 South Audley St., London W.1, England.

"The Physical Chemistry of Electrolytic Solutions" is a third edition of an American Chemical Society monograph series. It's a drastic revision of the previous edition. (i.e., edition two's Reversible Thermodynamics is now supplemented with Irreversible Thermodynamics). Aimed at researchers doing fundamental work with solutions of electrolytes, it contains much new data. 803 pp. $20 per copy, Reinhold Publishing Corp., 430 Park Ave., New York 22.

"Thread & Form Rolling" packs an amazing amount of engineering data into just 87 well illustrated pages. Though published by a maker of thread-forming attachments, it doesn't constantly pitch the firm's sales line at the reader. Instead, it honestly reviews advantages and limitations, supplying facts for foreman and designer, engineer and inspector. $1.50 per copy. Reed Rolled Thread Die Co., P. O. Box 350, Worcester 1, Mass.

"Status of High-strength Steels for The Aircraft Industry" reviews kinds of steel available and kinds wanted by missile builders. Sheet gets particular attention. 106 pp. PB 121639. $2.75 per copy. Office of Technical Services, Commerce Dept., Washington 25, D. C.

"Manual of ASTM Standards on Refractory Materials" needs no critical recommendations. It's as indispensable to refractory men as firebrick. In convenient form, it brings together all the society's standard and tentative specifications, classifications, test methods, and definitions pertaining to refractories. 402 pp. $5.50 per copy. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa.

New Production Ideas

Equipment, Methods and Services

Furnace Tester Performs Hot Hardness Checks

Hot hardness testing is this unit's job. It teams a Rockwell tester with a small electric furnace. Result: A means of determining hardness of metals at high temperatures. The setup checks hardness of metals contained within the controlled gas atmosphere, electrically operated furnace at heat exceeding 1500°F. Such tests enable research and production engineers to follow various phenomena as metals change in character when heated and subsequently drop to normal room temperatures. Basically, this Rockwell hardness tester—and its special furnace—was designed for laboratory use in determining hardness characteristics of metals in the 1500°F range under conditions approaching normal "in use" applications. For use to 1200F, the furnace works on 110-v, single phase power with 1500-w maximum input. For 1500°F operation, it uses 80-v, 60-cycle, single-phase current. (American Chain & Cable Co., Inc.)

For more data circle No. 45 on postcard, p. 145

Small, Lightweight Welder Has Easy Controls

Compact and portable, this hand welder features twist of the wrist current control. The welder has an output range from 25 to 250 amps with infinite output control and no missing amperes. It handles from 1/16 to 3/16-in. electrodes, welding metal from sheet up to 2-in. thick steel plate. Weighing just 112 lb, it measures only 12 x 13 x 15½-in. Thus, portability offers no particular problems. Welders can move it to the work area with ease. High open circuit voltage enables use of any alternating current welding electrodes. Rated at 50-pct duty cycle, model 250C has 200-amp output. The twist of the wrist current control employs no movable coils, shunts or flux diverters to loosen and cause noises from prolonged use. (Brennen, Bucci & Weber, Inc.)

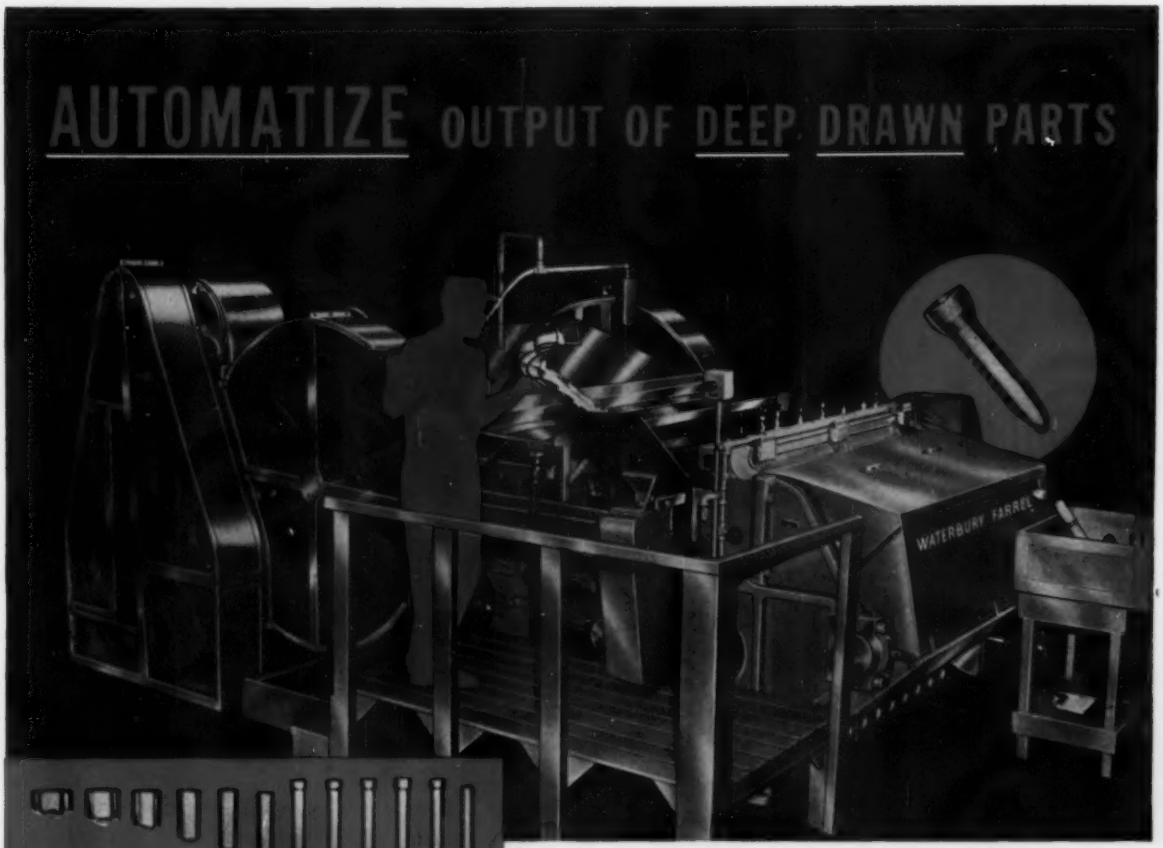
For more data circle No. 46 on postcard, p. 145

Automatic Lube System Lets Shaper Run Smooth

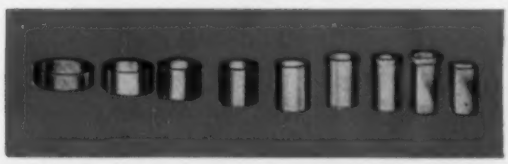
Smooth operation at high speeds is assurred for this shaper by its automatic pressure lubrication system. The 7-in. stroke precision bench machine tool uses a cam-operated piston pump; this circulates lubricating oil from a large reservoir to all important bearing surfaces. Oil pressure is adjustable; it can be maintained at all speeds. This cushions the shock of reciprocating ram action and interrupted cuts, resulting in very smooth operation even at maximum speeds. Length of ram stroke is adjustable, 0 to 7 in. The rocker arm shoe is graduated to indicate length of stroke. Stroke rates range from 42 to 195 per minute; cutting speeds, 3 to 114 fpm. Its tool head has 3-in. feed and swivels to any angle. The work table is 6 5/16-in. long, 5 wide and 5⅜ deep. Vertical travel of table is 5 in. (South Bend Lathe Works.)

For more data circle No. 47 on postcard, p. 145

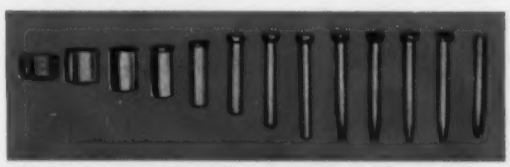
AUTOMATIZE OUTPUT OF DEEP DRAWN PARTS



Knife handle made from .047 thick German silver on a #7-11 station machine. Length of shell, 4⅛"; Dia., ⅛"; production, 2280 pieces per hour.



1¾" sq. x 2½" long condenser can be made from .018" thick zinc on a #5-9 station machine. Production, 3600 cans per hour.



Ball point pen holder made from .014" thick brass on a #4-12 station machine. Part measures ⅜" Dia. x 3¼" long. Production, 4200 parts per hour.

Use WATERBURY FARREL Horizontal Redraw Presses For Low Cost, Mass Production

Continuous, progressive drawing on these multiple station presses automatizes the production of square, round, elliptical, straight or shouldered, deep drawn shells. And, the machine will perform such consecutive operations as drawing, bottom piercing, curling, fluting, clipping and other work.

No longer is it necessary to form these shells on single purpose presses, in separate operations requiring intermediate annealing and handling. Work progresses smoothly, continuously and automatically through these Horizontal Redraw Presses.

For automation in feeding material, Waterbury Farrel can supply (1) a cupping attachment for single machines to permit feeding strip stock, or, (2) a cupping press with gang tooling and a conveyor system for supplying cups to a bank of machines.

Write today for your free copy of CIRCULAR 926-M describing these machines and the wide range of sizes available.

The WATERBURY FARREL FOUNDRY & MACHINE CO.
WATERBURY, CONN.
SALES OFFICES: Chicago • Cleveland • Millburn, N. J.

WF-36

Bolt, Nut & Screw Machinery

Power Presses

Rolling Mill Machinery

Wire Mill Equipment

Sendzimir Mills and other Special Machinery

Machine Quenches Heated Gears, Other Items

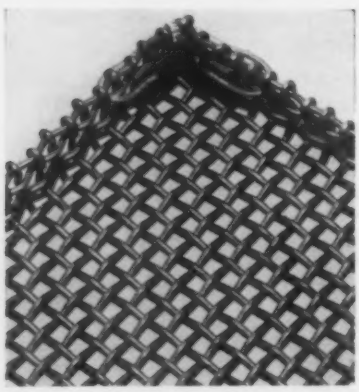
Quenching without distortion at fast production rates is this unit's job. It processes heated gears and other round, flat or cylindrical objects three times faster than older models. Such rapid work results from decreased time in the quenching dies and automatic unloading. The machine receives and discharges workpieces one every 30 seconds. Key features include pulsing and flexing cycles. Flexing starts after contact rings close on the workpiece. The part is flexed between the upper and lower contact rings with a diaphragming action. This helps reduce substantially distortion of the part. Quenching consists of forcing oil uniformly over and around the part, instead of mere immersion. Pulsing is the momentary release and re-application of all pressure applied to the workpiece during controlled quenching. This lets the piece contract without undue strains. (The Gleason Works).

For more data circle No. 48 on postcard, p. 145

Builders Improve Centerless Grinder Design

Improvements in two of its centerless grinding machines have been unveiled by a major builder. These two grinders, rated at 15 and 25 hp respectively, conform to the same general design. Each share the improvement. Grinding wheel truing controls are now at the left-hand end of the bed for better operator convenience. The bed is 5-in. longer, to provide a greater area of support for grinding wheel truing units. Larger throat capacity accommodates bigger regulating wheels (13-in. diam vs. 12). For manual infeed with the automatic hydraulic ejector, the infeed lever can be moved through a partial arc, while still retaining the advantage of automatic work ejection. The workrest pad is now machined with a parallel slot, to facilitate alignment of the workrest blade with a dial indicator. (Cincinnati Grinders, Inc.)

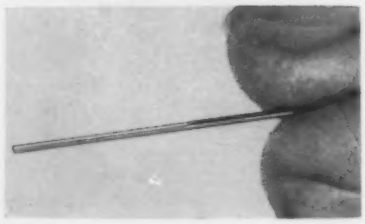
For more data circle No. 49 on postcard, p. 145



Sintering, Heat-treat Tray Resists Failure

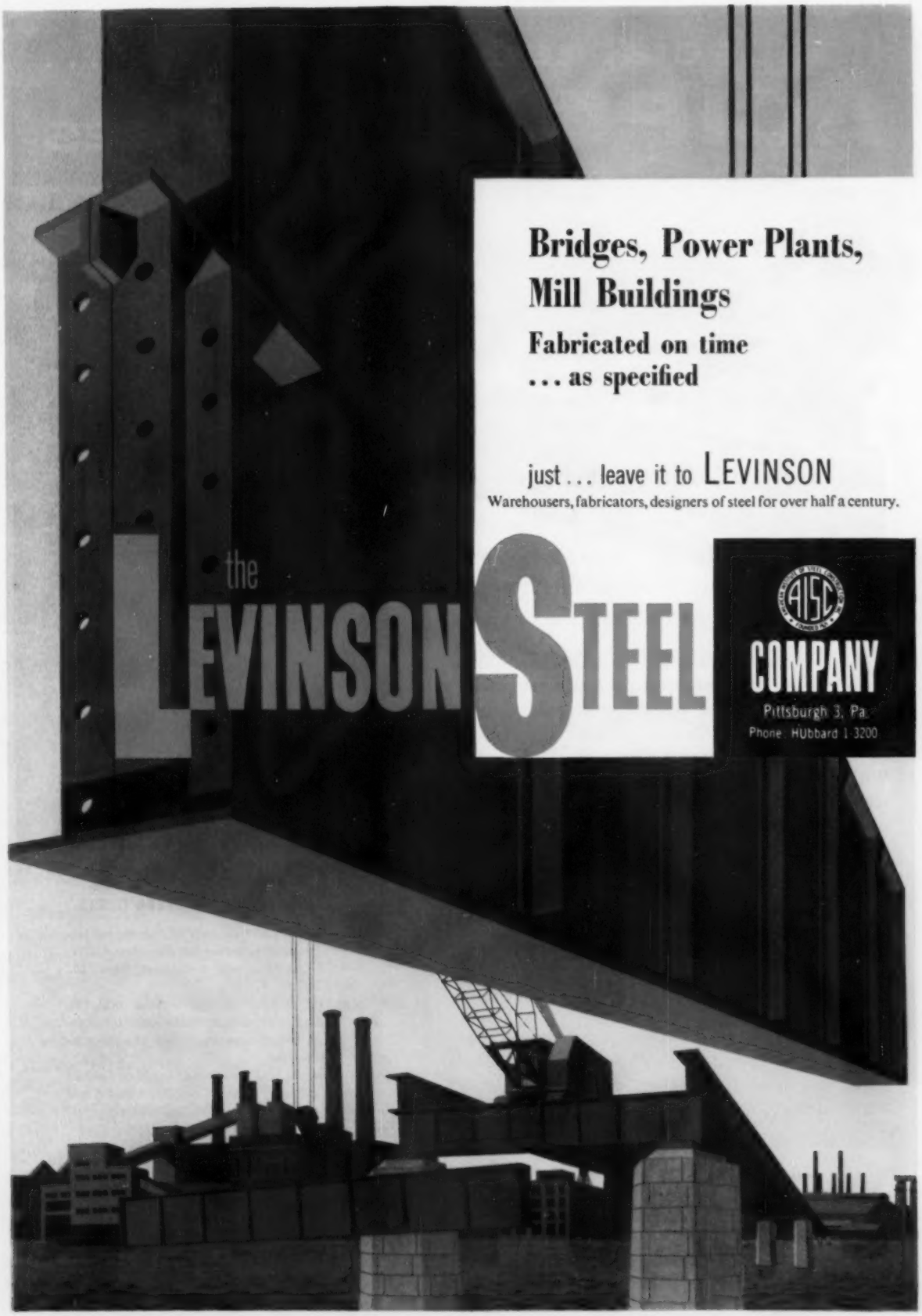
A fabricator of metal-mesh conveyor belts, wire cloth and wire cloth specialty products has developed a strong wire cloth tray. This tray accommodates sintering and heat-treating of powder metal parts and other metal products. Sometimes, trays of this type begin to fail at the corners after a period of time. To offset this, and lengthen the life of the trays, a wire clip is now inserted around each corner. This wire clip starts at the inside corner, extends along the inside of the tray for about 2 in., then runs through to the outside of the tray, back around the corner and through to the inside of the tray again. Ends are then welded at the inside corner. The clip has also been designed to allow for heat expansion. (Cambridge Wire Cloth Co.)

For more data circle No. 50 on postcard, p. 145



Miniature Tools Ream Tiny Drilled Holes

Like their big brothers, little holes often need reaming, too. So one reamer manufacturer is introducing a line of miniature reamers to finish holes made by micro drills and similar tools. These miniatures are engineered small sizes of the maker's larger straight shank straight flute reamers. Ground from the solid and provided with end relief, the tiny tools have +0.0002, —0.0000-in. tolerances. They come


Bridges, Power Plants,
Mill Buildings
Fabricated on time
... as specified
just ... leave it to LEVINSON
Warehousers, fabricators, designers of steel for over half a century.
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LEVINSON STEEL
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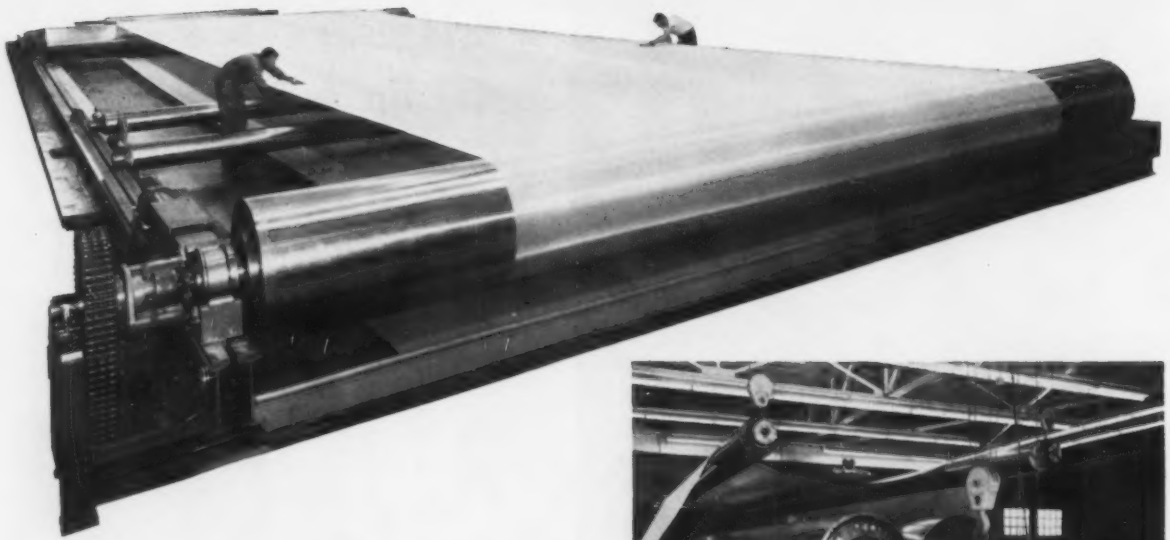
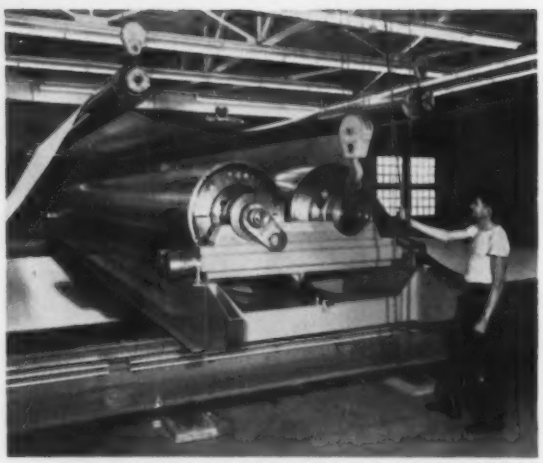
In specialized applications...
ACIPCO CENTRIFUGALLY SPUN STEEL TUBES





Appleton Wire Works, Inc., manufactures high quality fourdrinier wires for paper making machines. These fine-mesh wires are woven in widths up to 340 inches and lengths over 180 feet.

At its Montgomery, Alabama, plant, Appleton Wire Works, Inc. uses ACIPCO steel tubes— centrifugally spun and polished at Acipco—as stretch rolls on the huge finishing table. These 35.625″ OD, 410″ long rolls must be both dimensionally stable and balanced and must have a polished surface which will not affect the delicate woven wire surface mechanically or chemically.

Here is another example of Acipco versatility. If your application requires heavy wall steel or alloy iron tubes with special physical, chemical or metallurgical properties "built-in," Acipco can serve you. Investigate Acipco's complete "one source—from start to finish" facilities. A call or letter will bring full information on Acipco centrifugally spun tube applications in your field.

VERSATILE ACIPCO CENTRIFUGALLY SPUN STEEL TUBES

Size Range: Lengths up to 410″ to meet modern machinery requirements have been produced. OD's from 2.25″ to 50″; wall thicknesses from .25″ to 4″.

Analyses: All alloy grades in steel and cast iron, including heat and corrosion resistant stainless steel, plain carbon steel and special non-standard analyses.

Furnished: As cast, rough machined, or finished machined, including honing. Complete welding and machine shop facilities for fabrication.

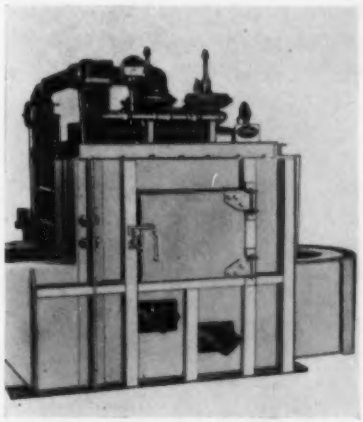
SPECIAL PRODUCTS DIVISION
AMERICAN CAST IRON PIPE CO.
BIRMINGHAM 2, ALABAMA

in wire gage sizes No. 80 (0.0135 in.) through No. 61 (0.0390 in.). (Lavallee & Ide, Inc.)

For more data circle No. 51 on postcard, p. 145

Melt, Hold Furnace

Gas fired, new combination melting-holding furnaces come in 1200 to 5000-lb capacity sizes. Using automatic temperature controls, they handle diecasting, permanent



mold casting or sand casting of aluminum. Rejects and back scrap can be charged back on the sloping hearth, eliminating any contamination of the inside of the furnace with inserts. (Sunbeam Corp.)

For more data circle No. 52 on postcard, p. 145

Welding Holders

More than 1000 separate combinations of resistance welding setups are now possible with interchangeable components supplied with a new line of standardized resistance welding holders. Components include holders, barrels, and adaptors. Many of these combinations, according to the manufacturer, could be accomplished previously only by specially designed holders. (P. R. Mallory & Co., Inc.)

For more data circle No. 53 on postcard, p. 145

Aluminum Cleaner

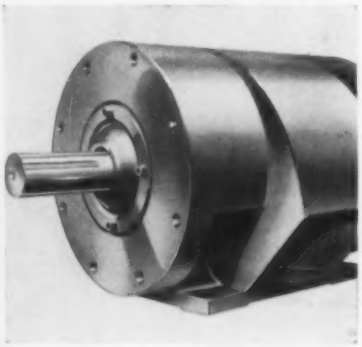
In liquid form, a new aluminum cleaner and deoxidizer brushes onto aluminum surfaces before welding

or joining. It cleans and deoxidizes the surface in one operation. Removal is quick and easy. It merely wipes off; no brushing is required. Small parts can be treated by dipping, then flushing with water. (Clarkson Laboratories, Inc.)

For more data circle No. 54 on postcard, p. 145

Variable-speed Drive

An infinitely variable-speed drive uses constant-speed motors. Designed around the well known eddy-current principle, the drive comes in four drip-proof models in six



different sizes. They handle motors up to 150 hp at 1750 rpm. Maximum torque transmittal is 450 ft/lb. Direct-current power supplies are not required. (Cone Drive Gears Div., Michigan Tool Co.)

For more data circle No. 55 on postcard, p. 145

Metal-clad Switchgear

Indoor and outdoor 4.16-kv horizontal drawout switchgear in a new line is metal clad. Designed for ease in installation, maintenance and operation, the line features a new power circuit breaker to meet such needs as two-cycle operation. It's only 72-in. high, has eye-level instrumentation and shoulder height accessibility of auxiliary equipment. (Allis-Chalmers Mfg. Co.)

For more data circle No. 56 on postcard, p. 145

Aluminum Steel Rod

Especially recommended for electrical transmission and distribution lines is a new aluminum clad rod.

Produced by a completely new controlled weld process, this rod has an extremely even 25-pct aluminum cover. It resists corrosion, is highly conductive, lightweight and strong. (Copperweld Steel Co.)

For more data circle No. 57 on postcard, p. 145

Turning Rolls

A new design in power turning roll equipment eliminates cross or jack shafts normally employed for driving each roll. The design incorporates an individual drive motor for each roll assembly on the power roll. Individual drives consist of ac constant speed squirrel cage motors; variable speed is obtained through use of magnetic slip couplings. Driving power is furnished from alternating current. A minute amount of the ac is converted to dc to operate the magnetic slip clutch by use of a small inexpensive Thyrotron tube. (Pandjiris Weldment Co.)

For more data circle No. 58 on postcard, p. 145

Aluminum Bucket

Use of aluminum in new clamshell buckets of 3 to 10 cu yd capacities reduces materially the dead weight of the bucket. This also reduces load on the crane. It eliminates up to 1000 lb of dead weight, depending upon the size of the bucket. (The Owen Bucket Co.)

For more data circle No. 59 on postcard, p. 145

Rust Preventive

Non-flammable and non-toxic, a rust preventive for industrial use comes in a 16-oz aerosol container. The product keeps rust off all types of metal products, machinery, molds, assemblies, parts, etc. (Lehigh Chemical Co.)

For more data circle No. 60 on postcard, p. 145

Underlay Electrode

For high-speed welding, a new electrode is especially practical as a low-cost build-up deposit and/or underlay for specialized hardfacing. Almost universally adaptable, the build-up rod is a medium carbon,

When you buy from Ohio Seamless

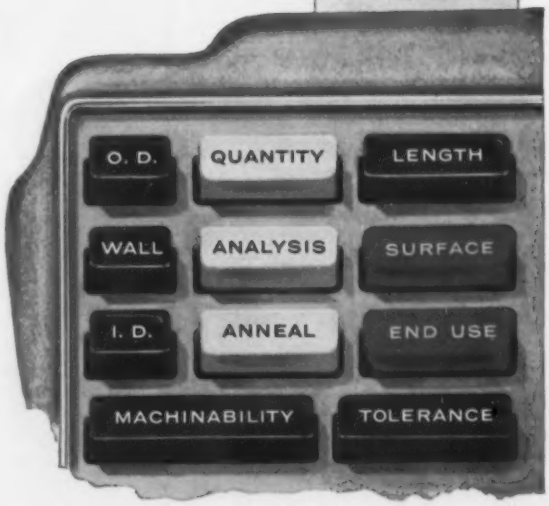
YOU PRESS THE BUTTON
OHIO SEAMLESS
DOES THE REST

Buying steel tubing from Ohio Seamless doesn't cost—it *pays*. Our minimum quantities are generally smaller than you may realize . . . often as small as 100 to 150 feet, in certain seamless grades and sizes.

When you buy from us, you're dealing with tubing *experts* . . . men who can recommend the *exact* Ostuco Tubing to suit your product and processes. There's no compromise on analysis, size, anneal, etc.

Advantages of buying from Ohio Seamless multiply, the closer you examine them. Our single-source service eliminates headaches of interplant shipments . . . possible errors . . . multiple purchase orders and invoices. Ohio Seamless keeps your production lines humming because you get *precisely what you want.*

For proof, contact our nearest sales office or the plant at *Shelby, Ohio—Birthplace of the Seamless Steel Tube Industry in America.* AA-7118



SALES OFFICES: BIRMINGHAM • CHARLOTTE • CHICAGO (Oak Park) CLEVELAND • DAYTON • DENVER • DETROIT (Ferndale) • HOUSTON LOS ANGELES (Lynwood) • MOLINE • NEW YORK • NORTH KANSAS CITY PHILADELPHIA (Wynnewood) • PITTSBURGH • RICHMOND • ROCHESTER ST. LOUIS • ST. PAUL • ST. PETERSBURG • SALT LAKE CITY • SEATTLE TULSA • WICHITA

CANADA: RAILWAY & POWER ENGR. CORP., LTD.

EXPORT: COPPERWELD STEEL INTERNATIONAL COMPANY
225 Broadway, New York 7, New York

FIFTY YEARS
OSTUCO TUBING
1908 1958

OHIO SEAMLESS TUBE DIVISION
of Copperweld Steel Company SHELBY, OHIO

Seamless and Electric Resistance Welded Steel Tubing • Fabricating and Forging

low alloy electrode with powdered metal casting. It work hardens. Used by itself it's tough and long wearing under moderate impact and abrasion. It stands up well against shock and rolling impact. As an economical base for hard deposits, it's useful where heavy abrasion, compression and impact are present, such as on heavy gears, tractor

rollers and ore chutes. Easy to use, the electrode is "self-starting and restarting" and can be applied by the "drag" technique or by using a "free" arc. Its hardness ranges from Rockwell "C" 32-45 in "as welded" condition to Rockwell "C" 56 after work hardening. Annealing can reduce the hardness to Brinell 153 for machining. In addition, it can be heat treated, air hardened and forged. (Marquette Mfg. Co.)

For more data circle No. 61 on postcard, p. 145

Oil Chiller

A refrigeration unit lowers cost of producing resistance electric welded tubing. The 200-hp automatic cooling unit keeps emulsified oil at a temperature of 60°F. The oil mixture, which is 95 pct water and 5 pct oil, removes heat from the tubing after welding. (The Trane Co.)

For more data circle No. 62 on postcard, p. 145

Electrical Steel

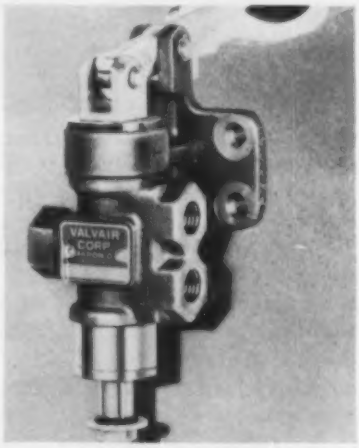
A new electrical steel for high frequency equipment has applications in missiles, aircraft and

special industry uses. Called 0.004-in. gauge Silectron Special Grade strip, this product is in addition to 0.004-in. gauge Silectron previously produced. It's designed for high frequency applications where high permeability and low exciting current are essential at high inductions. (Allegheny Ludlum Steel Corp.)

For more data circle No. 63 on postcard, p. 145

Manual Valve

Lever actuated, a new manual valve with a foot bracket end section is especially designed for concealed mounting behind or below control panels. Said to combine short lever throw and neat appearance of finished installation with ready acces-



sibility to piping connections, the new foot bracket end sections come with manual valves in sizes ranging from ¼ through 1-in. NPT. These manual valves provide unrestricted fine capacity, leak-free service, plus easy maintenance and installation. (Valvair Corp.)

For more data circle No. 64 on postcard, p. 145

Saw Sharpener

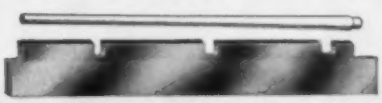
An automatic saw sharpening machine rapidly, accurately, and economically sharpens circular metal saws from ½ to 14-in. diam, from finest teeth to two per inch. It sharpens all saws used in cutting steels, brass, copper, bronze, aluminum, plastics, etc. Arbors are

Talide® Blades... THE No. 1 CHOICE OF CENTERLESS GRINDER OPERATORS!

Above view shows Landis Centerless Grinder in operation. Talide-tipped work rest blades have been supplied as initial equipment on many Landis Centerless Grinders.

LARGE ELECTRIC MOTOR PLANT

Part . . . . . Stainless Steel Rotor Shaft for Electric Motor.
Operation . . Grind 7 diameters simultaneously.
Machine . . . No. 12 Landis Centerless Grinder.
Blade . . . . . Special multiple step Talide-tipped work support blade No. C-4884.
Results . . . . Talide-tipped blade in continuous production for 91 days (2 turns per day) compared to best previous production run of 3 days with hard alloy steel blade.



LEADING ARMS PRODUCER reports outstanding service life with Talide centerless blades over past 10 years—outperforming and outlasting all other work support blades.

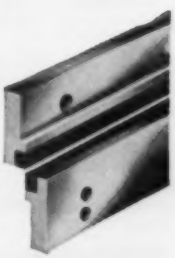
Part . . . . . 12 gauge shotgun barrel.
Operation . . Grind entire gun barrel simultaneously to series of compound angles.
Machine . . . No. 5 Cincinnati Centerless Grinder.
Blade . . . . . Special Talide-tipped work support blade 34⅜" long, having 9 steps and 10 compound angles ground to .0001" tolerance.
Results . . . . Talide-tipped blades last 150 days per grind—hardened steel blades 3 days. Several Talide blades have been in continuous production for over 5 years—being retipped with a new Talide metal wear strip every 12 to 18 months.

Over 50 sizes and styles of standard blades carried in stock—with special blades made promptly to order. Write for 76-page catalog 56-G or ask for sales engineer to call.

TALIDE ROTARY KNIVES GIVE PHENOMENAL RUN OF 90-1 . . .

A leading strip steel producer of razor blade, high-carbon, spring and stainless steel reports over 1200 coils were gang slitted with Talide knives, compared to 15 coils with steel knives. More tonnage was produced in one regrind of the Talide knives than over the entire life of a set of steel knives. Burr-free, clean-cut edges produced with scrap rate practically eliminated.

$18,000 SAVED USING TALIDE SHEAR BLADES



A large electric motor manufacturer, shearing .014" silicon steel for transformers, advises first-year savings of $18,000 in blade costs after completely equipping their press line with Talide-tipped blades in lengths ranging from 15" to 87". Talide shear blades are averaging 1,000,000 cuts per grind compared to 10,000 cuts obtained with steel blades.

METAL CARBIDES CORPORATION
Youngstown 12, Ohio

EXCLUSIVE RETIPPING SERVICE

Because of its exclusive hot press method, Metal Carbides is able to rework worn, chipped out or broken areas of carbide-tipped blades back to original size and dimension with all breaks and defects eliminated.

9,324 #2 Cans of Corn Per Minute...

STEEL WAREHOUSE "TAKES TO THE AIR"

Fig. 1 — TRAK-RAK fork lift at top of column, lifting bundle of steel rod. Unit serves 3 long aisles of racks.

TRAK-RAK SYSTEM INCREASES STORAGE SPACE, SAVES 22% CAPITAL BUILDING INVESTMENT

When A. C. Leslie & Co. Limited, needed more storage area in its busy Toronto steel warehouse, it decided to "reach for the ceiling" with a Chicago Tramrail TRAK-RAK System of vertical storage and handling. As a result, the company estimates it not only saved 22% of projected capital building costs, but increased the overall efficiency and speed of the Toronto operation. The company expects to gain further economies as the TRAK-RAK system is used to its full extent.

A 5 ton capacity toprunning TRAK-RAK Crane was installed in each of two 40 ft. wide bays to serve specially designed 18 ft. high material storage racks (Fig. 1). Each crane bridge has an overhead trolley, from which is suspended an electrically operated rotating column

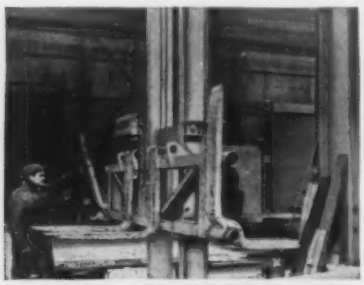


Fig. 2 — Carriage equipped with 2 pairs of forks. Operator is flopping outer forks up.

equipped with a special fork lift. All operations of the fork lift, which revolves to serve either side of the aisles, moves toward or away from the racks, and raises or lowers on the column, are controlled by the operator who rides with the carriage.

Two pairs of forks are mounted on the carriage. The outer forks may be flopped back (Fig. 2) leaving the inside forks in position for handling palletized or crated material. For handling long boxes, bars, etc., the outside forks are flipped back into working position.

A TRAK-RAK feature which added to handling speed and insured safe operation was the safety interlock switch system which prevents the column from running

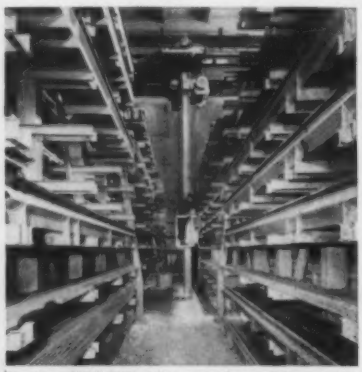


Fig. 3 — TRAK-RAK column requires minimum aisle space for operation.

into a rack and permits full rotation only when the unit is safely beyond the end of the racks.

The A. C. Leslie Company reports that a similar TRAK-RAK System installed in its Montreal warehouse permitted a 37% savings in capital building investment with equally good operating efficiency and economy.

For complete details on the TRAK-RAK System of vertical storage and handling, write the manufacturer:

CHICAGO TRAMRAIL CORPORATION
1326 S. Kostner Avenue • Chicago 23, Ill.

supplied for hole sizes from ¼ to 1-in. diam. A master indexing feature makes possible cutting all new teeth with perfect concentricity or even changing the number of teeth in a saw to more or less per

inch. Attachments provide for hole saw, band saw, and hack saw sharpening. These attachments, entirely automatic, take only a few minutes to put on or take off the machine. (Hamco Machines, Inc.)

For more data circle No. 65 on postcard, p. 145

Metal Crusher

Designed to reduce metal turnings, aluminum castings and other forms of metal scrap, a new crusher operates at a 20 to 40-ton per hour

rate. Its maker recommends the crusher for large scale operations in industrial plants, aluminum smelters, and metal recovery yards. (American Pulverizer Co.)

For more data circle No. 66 on postcard, p. 145

9,324 #2 Cans of Corn Per Minute...

No. 3 Electrolytic Tinning Line — Jones & Laughlin Aliquippa Works

This is the way the food industry might rate the speed of this Wean Electrolytic Tinning Line. And canners across the country recognize that such a modern, continuous, high speed tinplate line makes an important contribution to their business. For quality tinplate, produced at speeds up to 2000 fpm, is the low cost material from which over three billion "tin cans" are made annually.

Forty-seven Electrolytic Tinning Lines, engineered and constructed by Wean, account for more than 75% of the annual tinplate production.

2309

THE WEAN ENGINEERING COMPANY INC. • WARREN • OHIO

No matter what you make from Cold Rolled Steel

An ALAN WOOD Representative can help!

Thinking of making a Bi-Plane-O-Car? You might find a terrific market for this all-in-one get-about. But you might find unusual production problems, too. Better call your A.W. Representative *before* you start to produce. Your A.W. Representative may order a special metallurgical study of your problems and bring about savings that build new profits and increase production. He can provide you with the latest information on cold rolled steel and its application, plus experienced advice on the gauge, size and type to order. Call him today. Your A.W. Representative is always available . . . never out of touch with your location.

ALAN WOOD STEEL COMPANY

steelmasters for more than a century and a quarter • CONSHOHOCKEN, PA.

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Montreal and Toronto, Canada—A. C. Leslie & Co., Limited

IRON PRODUCTS
"Swede" pig iron

STEEL PRODUCTS
Plates (sheared)
A.W. Dynalloy (high strength steel)
Hot rolled sheets
Hot rolled strip
Cold rolled sheets
Cold rolled strip

ROLLED STEEL FLOOR PLATE
A.W. ALGRIP *abrasive*
A.W. SUPER-DIAMOND *pattern*

COAL CHEMICALS

A.W. CUT NAILS
Standard & Hardened

MINE PRODUCTS
Iron ore concentrates
Iron powder
Crushed stone
Sand

COKE
Foundry, industrial & metallurgical

PENCO METAL PRODUCTS DIVISION
Steel cabinets, lockers & shelving

The Iron Age Summary

May Orders Show Improvement

Rate of new business indicates that April saw the bottom of the steel market.

Pickup in diversified orders helps offset continued automotive doldrums. Upturn in linepipe and plate orders is noted.

▪ Incoming orders indicate the low point of the steel market was hit in April. For the fourth straight week new order volume has gone along on an even keel, with some mild improvement by diversified customers.

Continued lethargy by the auto industry is obscuring the improvement in other lines. The mills are getting small orders in larger quantities, indicating a number of small pickups.

Orders Are Up—Order pickups at most major mills make this week one of the most encouraging to the steel industry in some time. One Pittsburgh mill says sheet orders are 10 to 15 pct over last month. Another says a pickup in sheet orders will mean a climb of about 5 pct in its operating rate in the next six weeks.

A linepipe pickup seems to be coming, but timing is uncertain. Orders of plate for linepipe are gaining, and there is some mild worry expressed over second half plate availability.

Automotive Still Depressed—In spite of the overall dismal automotive picture, there have been some stepups in delivery dates for automotive sheet and bars. But the additional orders for May delivery are small and total auto business for the month is not expected to come up to April.

Some hedge buying is going on, but not for automotive. This, plus seasonal factors, indicates that the market will dip again in July. These seasonal factors include hot weather, metalworking plant vacations, steel plant vacations, and longer than usual automotive shutdowns.

Look to New Models—Steel mills are eyeing the automotive plans for longer and earlier changeovers with mixed feelings. On the negative side, it will weaken early summer volume considerably. But the steel industry is looking forward to 1959 models with hope that they will stimulate normal auto buying

Another factor in the automotive picture is the current contract negotiation between the auto companies and the United Automobile Workers.

Labor Factor—It's possible the auto companies are waiting until the contract deadline before deciding whether to place more orders for steel for the runout of 1958 models. A strike, of course, would halt any possible order pickup before the 1959 models.

Auto companies are waiting to release orders for parts for 1959 models. Parts suppliers with orders say they are not going to order steel until they see the releases. Some stampers, however, have placed orders for pilot runs for parts of new models to be delivered around mid-June.

Steel Output, Operating Rates

Production (Net tons, 000 omitted)	This Week 1,481	Last Week 1,412	Month Ago 1,270	Year Ago 2,228
Ingot Index (1947-1949=100)	92.0	87.9	79.1	139.6
Operating Rates				
Chicago	62.0	57.0*	55.0	85.0
Pittsburgh	52.0	53.5*	47.0	91.0
Philadelphia	61.0	56.0	59.0	102.0
Valley	40.0	38.5*	34.5	72.0
West	72.0	72.0*	69.0	104.5
Cleveland	30.0	26.0*	29.0	80.0
Buffalo	46.0	39.0	37.0	59.5
Detroit	46.0	37.0*	13.0	88.0
South	67.0	67.0	54.0	93.0
South Ohio River	61.0	53.0*	29.0	82.0
Upper Ohio River	75.0	76.0*	57.5	87.0
St. Louis	78.0	77.0	64.0	84.5
Northeast	31.0	31.0	31.0	66.5
Aggregate	...	52.3	47.1	87.0

*Revised

Prices At a Glance

(cents per lb unless otherwise noted)

	This Week	Week Ago	Month Ago	Year Ago
Composite price				
Finished Steel, base	5.967	5.967	5.967	5.670
Pig Iron (Gross ton)	$66.49	$66.49	$66.49	$66.56
Scrap, No. 1 hvy (Gross Ton)	$34.00	$32.67	$31.83	$47.17
No. 2 bundles	$25.50	$23.83	$23.17	$39.83
Nonferrous				
Aluminum ingot	26.10	26.10	26.10	27.10
Copper, electrolytic	25.00	25.00	25.00	32.00
Lead, St. Louis	11.30	11.80	11.80	14.80
Magnesium	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	94.25	94.25*	93.00	97.75
Zinc, E. St. Louis	10.00	10.00	10.00	11.50

New Values in Shop Equipment

Today's buyer of shop equipment knows what he's after. He has consulted engineers and other specialists.

Surprisingly, manufacturers welcome this alertness. It helps sell real efficiency.

■ The buyer is king in today's shop equipment market. This includes the broad category of shop benches, tool tenders, shelving, cabinets, and many other shop items.

Purchasing agents are not only demanding more service and faster deliveries, they are asking for and getting engineering advice. As a result, they know more about shop equipment than ever before. Some are even visiting shop equipment plants to check on the ability of the manufacturer to meet promised delivery schedules with quality products.

Works Both Ways—A number of shop equipment makers are happy about this knowledgeable buying. Says one, "Today, buyers are willing to pay more for more efficient products. Overall shop and worker efficiency is the criteria."

How are the shop equipment people meeting the challenge?

Deliveries have been cut to one or two weeks. At this time last year delivery took an average of two to three weeks.

Most distributors have extended warehouse facilities, can deliver almost anything right off the shelf. Manufacturers are ready to backstop their distributors with direct shipment to the customer when necessary.

Marketing Bolstered—Marketing and sales forces have been realigned. For instance, one organization has integrated marketing and sales departments of its shop equipment division with those of its office furniture-making subsidiary. The aim: To cover more ground.

Prices of shop equipment usually follow steel prices, have remained constant for some time. Because of the tight competition, makers say they are not likely to jump very soon, unless steel cost increases.

But, also because of the tight competition, manufacturers have been upgrading their products, and trying to make up the difference with production economies.

Competition at Work—Standard Pressed Steel Corp., Jenkintown, Pa., for instance, spent $1.8 million in 1957 for new and more efficient manufacturing equipment.

While there is little radically new on the market, more advanced production lines are prompting considerable redesign. New equipment has better appearance and efficiency. And, a lot more redesign is in the cards.

Non-Productive Products — One thing that is new is attempts by manufacturers to sell buyers on the non-productive shop equipment such as desks, tables, filing cabinets. Traditionally, the shop gets the castoffs of the administrative offices.

Some salesmen report reasonable success. They say it is because management is starting to recognize the value of attractive surroundings on shop efficiency.

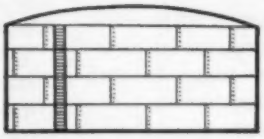
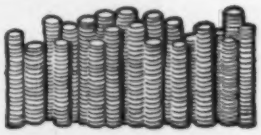
Shop equipment makers have also taken a page out of office furniture makers' book, and are designing their equipment so that it can be assembled in a number of combinations to do a number of very specific jobs.

IMPROVEMENT: Buyers know more about shop equipment than ever before, forcing makers to upgrade their products. The new Standard Pressed Steel Erectomatic shelving is erected and moved without tools.

WANT TO CUT PICKLING COSTS?

YOU CAN WITH ACP RODINE

Even though you are now using an inhibitor in your pickling bath, highly concentrated ACP RODINE can cut pickling costs. Savings in acid, steel and money, as shown in the chart, are based on: a monthly steel production of 15,000 tons; a selling price of $140.00 a ton; and an acid cost of $ .01 a pound.

ACID SAVED	 3 lb. per ton	 45,000 lb. per month	 540,000 lb. per year
STEEL SAVED	 1½ lb. per ton	 22,500 lb. per month	 270,000 lb. per year
DOLLARS SAVED	 $.135 per ton	 $2,025.00 per month	 $24,300.00 per year

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Sheet Sales Display Signs of Life

Orders from small tonnage users encourage mills.

They help make up for the slide-off in automotive sheet buying.

▪ Small tonnage sheet users are coming out of hibernation. Their new orders, while not large in volume, are welcomed by the mills. Activity by these buyers is helping make up for the slump in automotive sheet buying.

Producers in all market areas have noticed the stronger order tone. "Things are a little better," says a spokesman for a large Eastern mill, "Especially in sheet." Bookings for both May and June delivery have improved at Pittsburgh, in one case by 10-15 pct over April. Order intake at Cleveland is even with or above last month's levels.

Rollings Could Increase — Chicago district mills are three-quarters booked for June at present operating rates. Remaining tonnage should be sold by the end of this month. Any additional orders will require increased rolling schedules.

Other sheet products are moving at fair to good levels. Tinplate shipments continue strong. Galvanized, spurred by farm construction, is in more demand. Some mills have closed June bookings.

Plate — Demand has improved, but not as much as the mills had hoped. However, linepipe producers and tank fabricators are coming into the market for plate as they get more business.

Bar — Gains continue for hot-rolled bar, although the automotive lag blocks any big boost. May bar shipments are equal to or slightly above April rates. Cold-finished is not showing as much activity as hot-rolled. Reinforcing bar remains strong.

Fabricated Steel — Structural fabricators say the seasonal pickup in jobs was under expectations. Bidding on new work remains fiercely competitive. Most of the activity is in public construction with industrial building off. Fabricators are shipping out about twice the tonnage they are ordering.

Delivery times on fabricated structurals are way down. Structural demand at the mills has improved slightly. However, fabricators report producers will make special rollings to get orders.

Tinplate — If tinplate prices are going up July 1 users will be notified 35 days in advance by the mills. Because of this, steel market observers will be watching tinplate producers at the end of this month. If new prices are announced they might give a hint of what can be expected in other steel products at midyear.

PURCHASING AGENT'S CHECKLIST

Purchasers beginning to worry about low inventories. **P. 81**

Warehouses map plans for marketing and selling drive. **P. 86**

Numerically controlled machine tools do top job, but aren't selling too well. **P. 107**

Some can producers, however, believe new price schedules may not come until fall. That has been the case for about five years. The can makers also point out Canadian tin mills recently held the price line on tinplate while advancing carbon steel prices.

Meanwhile, mill inventories of tinplate remain high, although reduced throughout the first quarter.

New equipment, designed to increase tinplate production 85 pct at Kaiser Steel's Fontana plant, is now in operation.

Pipe and Tubing — Some improvement in the linepipe market is on the way. Pipeline operators are apparently again working on some projects shelved by the Memphis decision. This probably won't help boost mill shipments until the fourth quarter. However there's some opinion that linepipe will be moving in greater volume before many weeks.

In other products, buttweld is stronger, although mills are still operating around 50 pct of capacity. Oil country products remain lifeless. The only activity centers around river stock points established in the Southwest for faster pipe delivery to oil fields.

Seamless pipe in the larger sizes (10 through 16 inches) is in better demand along the East Coast.

Stainless — Orders are running ahead of April levels and some shutdown mills are resuming production. **Midwest** warehouses are starting to re-fill their stocks. Many had been living off inventories for the last six or eight months.

Export Prices — Reductions in export base prices for hot and cold-rolled sheet and reinforcing bar have been announced by U. S. Steel Export Co. The new prices, effective May 14, are designed to bring the company's prices "more in line with domestic delivered prices at seaboard" and aid in "distributing the products in foreign markets." The new prices per 100 lb: Hot-rolled sheet (18 gage and heavier)—$5.01; cold-rolled sheet-$6.22; and rebar—$5.51.

COMPARISON OF PRICES

(Effective May 20, 1958)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in **Heavy Type**; declines appear in *Italics*.

	May 20 1958	May 13 1958	Apr. 22 1958	May 21 1957
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	4.925¢	4.925¢	4.925¢	4.675¢
Cold-rolled sheets	6.05	6.05	6.05	5.75
Galvanized sheets (10 ga.)	6.60	6.60	6.60	6.30
Hot-rolled strip	4.925	4.925	4.925	4.675
Cold-rolled strip	7.17	7.17	7.17	6.870
Plate	5.12	5.12	5.12	4.37
Plates, wrought iron	13.15	13.15	13.15	10.40
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	50.00
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) coke	$10.30	$10.30	$10.30	$10.30
Tin plates, electro (0.50 lb.)	9.00	9.00	9.00	9.00
Special coated mfg. ternes	9.55	9.55	9.55	9.55
Bars and Shapes: (per pound)				
Merchant bar	5.425¢	5.425¢	5.425¢	5.075¢
Cold finished bars	7.30	7.30	7.30	6.85
Alloy bars	6.475	6.475	6.475	6.125
Structural shapes	5.275	5.275	5.275	5.00
Stainless bars (No. 302)	45.00	45.00	45.00	43.25
Wrought iron bars	14.45	14.45	14.45	11.50
Wire: (per pound)				
Bright wire	7.65¢	7.65¢	7.65¢	7.20¢
Rails: (per 100 lb.)				
Heavy rails	$5.525	$5.525	$5.525	$5.275
Light rails	6.50	6.50	6.50	6.25
Semifinished Steel: (per net ton)				
Rerolling billets	$77.50	$77.50	$77.50	$74.00
Slabs, rerolling	77.50	77.50	77.50	74.00
Forging billets	96.00	96.00	96.00	91.50
Alloy blooms, billets, slabs	114.00	114.00	114.00	107.00
Wire Rods and Skelp: (per pound)				
Wire rods	6.15¢	6.15¢	6.15¢	5.80¢
Skelp	4.875	4.875	4.875	4.225
Finished Steel Composite: (per pound)				
Base price	5.967¢	5.967¢	5.967¢	5.670¢

	May 20 1958	May 13 1958	April 22 1958	May 21 1957
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$70.97	$70.97	$70.97	$68.88
Foundry, Valley	66.50	66.50	66.50	65.00
Foundry, Southern Cin'ti	73.87	73.87	73.87	67.17
Foundry, Birmingham	62.50	62.50	62.50	59.00
Foundry, Chicago	66.50	66.50	66.50	65.00
Basic, del'd Philadelphia	70.47	70.47	70.47	68.38
Basic, Valley furnace	66.00	66.00	66.00	64.50
Malleable, Chicago	66.50	66.50	66.50	65.00
Malleable, Valley	66.50	66.50	66.50	65.00
Ferromanganese 74-76 pct Mn, cents per lb‡	12.25	12.25	12.25	12.75
Pig Iron Composite: (per gross ton)				
Pig iron	$66.49	$66.49	$66.49	$64.56
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$35.50	$33.50	$32.50	$46.50
No. 1 steel, Phila. area	34.00	34.00	35.50	51.50
No. 1 steel, Chicago	32.50	30.50	27.50	43.50
No. 1 bundles, Detroit	*23.50*	24.50	21.50	39.00
Low phos., Youngstown	37.50	34.50	32.50	45.50
No. 1 mach'y cast, Pittsburgh	48.50	48.50	48.50	54.50
No. 1 mach'y cast, Phila.	47.50	47.50	47.50	56.50
No. 1 mach'y cast, Chicago	44.50	43.50	41.50	47.00
Steel Scrap Composite: (per gross ton)				
No. 1 hvy. melting scrap	$34.00	$32.67	$31.83	$47.17
No. 2 bundles	25.50	23.83	23.17	39.83
Coke Connellsville: (per net ton at oven)				
Furnace coke, prompt	15.38	$15.38	$15.38	$15.38
Foundry coke, prompt	$17.50-$19	$17.50-$19	$17.50-19	$17.50-$19
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	25.00	25.00	25.00	32.00
Copper, Lake, Conn.	25.00	25.00	25.00	32.00
Tin, Straits, N. Y.	94.25†	94.25*	93.00	97.75
Zinc, East St. Louis	10.00	10.00	10.00	11.50
Lead, St. Louis	*11.30*	11.80	11.80	14.80
Aluminum, virgin ingot	26.10	26.10	26.10	27.10
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	29.50	29.50	29.50	33.00

† Tentative. ‡ Average. * Revised.

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Steel Scrap Composite

Averages of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

INDEX TO PRICE PAGES

Midwest Sets Pace For Upturn

It looks like the scrap market may be starting upward in earnest.

Dealers have suddenly turned optimistic. Brokers are wary of making long range commitments.

■ The Midwest is the center of new strength in the scrap market.

For the third week running, the Chicago district paced the upward price trend. Brokers there are paying more for some grades than they were getting for consumer delivered orders in the middle of last week.

The Youngstown market surged upward when a Valley mill began buying prime dealer grades at $3 above the previous price. Dealers who only a few days ago were singing the blues have suddenly become bullish. They're holding tight to their best scrap, looking for still higher prices.

The Youngstown buy carried the Cleveland market up with it. Dealer scrap in the Cleveland district may get an added push if a rumored shutdown of local automotive plants goes into effect.

The fever has spread to Pittsburgh. Yards there are refusing spot offers for openhearth scrap at $3 to $4 above the market. Pittsburgh brokers are reluctant to commit themselves for tonnage orders under $38, adding grist to prospects for higher prices.

A drop in industrial offerings in the Detroit area, plus increased steel production, strengthened that market for the first time in months. Most other markets held steady with the exception of Los Angeles. Prices there fell sharply when export orders were cut.

Based on Midwest strength, The IRON AGE No. 1 heavy melting Composite Price rose $1.33 to $34.

Pittsburgh—A stronger feeling at dealer and broker levels has brought a sharp jump in prices of openhearth grades, low phos, and factory bundles. There is no general trading of openhearth scrap, but yards are refusing spot mill offers of $37 for No. 1 heavy melting. Resistance stems from strength of nearby districts. Blast furnace grades are up $1, as outside prices draw turnings from the district.

Chicago — With mill operating rates finally advancing in earnest, the scrap market shows signs of growing strength. Broker buying prices are being forced up by dealer resistance. Mill offering prices advanced $2, but have failed to bring heavier tonnage of premium grades of scrap.

Philadelphia—There has been little activity in this market since the last export shipment was completed last week. Local mills aren't buying and prospects for new export business in the next month are glum.

New York — Small sales raised No. 1 and No. 2 heavy melting grades $1 to tops of $26 and $23 respectively. No. 2 bundles level off at $15-$16, down 50¢.

Detroit—Trading is at a virtual standstill pending closing of industrial lists. However, the market continued to rise as dealer optimism strengthened. Source of strength: Increased steel production here, and an expected 30 pct drop in industrial offerings in June.

Cleveland—This market jumped $3 when a Valley mill placed an open order for No. 1 dealer grades at $37. Cleveland market rose in sympathy. The new price indicates the market could go sharply upward with a few large orders because the bulk of prime scrap is held by a few yards.

St. Louis—The market continues strong although price changes are few. For the most part, dealers are holding on to what little scrap is coming into their yards. One mill increased prices of No. 1 bundles $2. Steel car axles are up $2.

Birmingham—A large cast iron consumer changed its specifications this week and is buying No. 1 agricultural and machinery cast, free of automotive cast, on the basis of $51 per gross ton delivered. This special buy has not affected quoted prices.

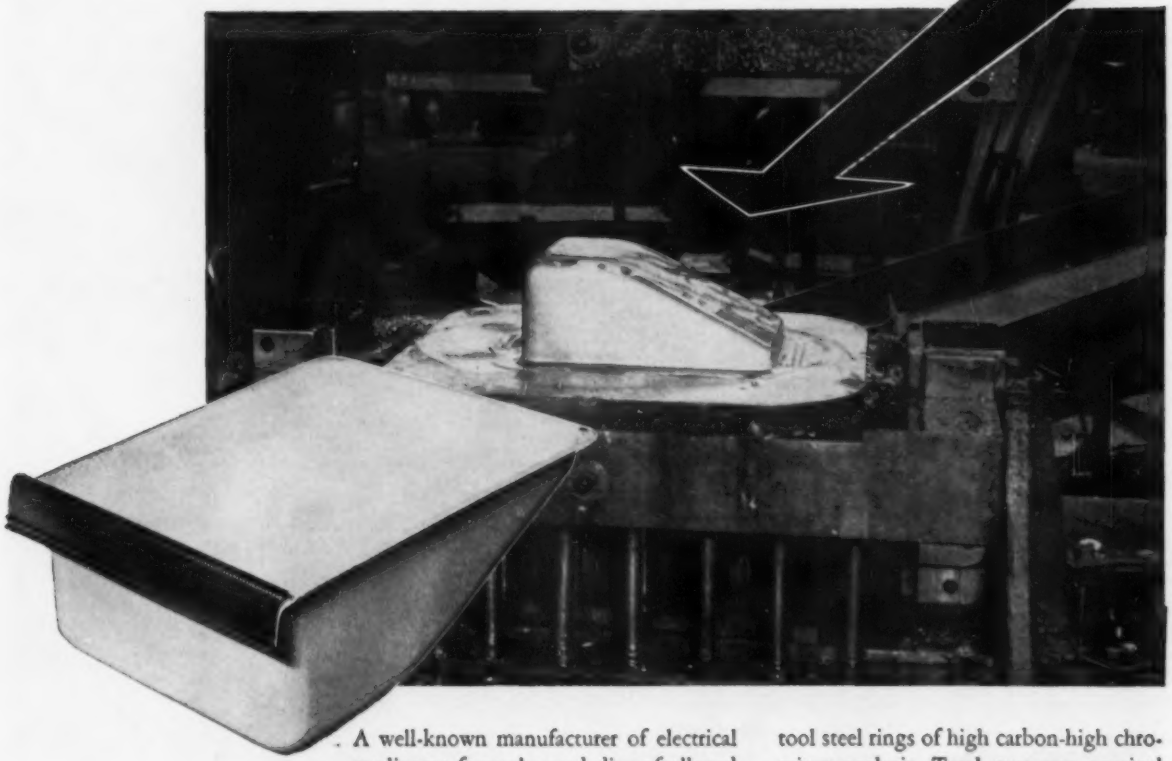
Cincinnati—The foundry market here has not rebounded despite the end of a strike. Customers' patterns were withdrawn and placed elsewhere. Some foundries are on a one-day week. Steel market is unchanged, but some increase is expected in June.

Buffalo—A slight increase in the ingot rate has generated some optimism here. Prices, though, are unchanged. Mill scrap inventories are still high.

Boston — The outlook is improved. Most openhearth grades rose $1—the first increase in many weeks. Also, there are signs of life in the export market.

West Coast—Prices dropped $2 to $4 a ton in Los Angeles for most grades. Exporters are cutting their orders for No. 2 bundles, dropping this grade $7. Mills are practically out of the market.

Here's how A-L CAST-TO-SHAPE TOOL STEELS solved a serious scrap problem on this job



A well-known manufacturer of electrical appliances formerly used dies of alloyed ductile iron castings to draw refrigerator crisper pans.

These dies had to be redressed after every 10,000 pieces (approximate cost: $1300 each) and had to be replaced after every 30,000 pieces. 8 to 10% of the pans were scrapped due to defects.

Because of this scrap problem and the severity of the draw—a 52% reduction of the steel—it was decided to rebuild the dies using a suitable grade of tool steel.

A 2" cut was taken off the top of the old cavity and the draw ring. These cuts were replaced with A-L Cast-to-Shape tool steel rings of high carbon-high chromium analysis. Total cost was nominal compared with buying entirely new dies.

Each of the revised dies has produced approximately 500,000 pans. Their condition indicates that probably *twice* that many can be drawn before the dies must be redressed. Defective pieces have been reduced to a mere 1½ to 2%—*an 80% reduction!*

● Ask your A-L representative TODAY how Cast-to-Shape tool steel can help solve your production problems . . . or write *Allegheny Ludlum Steel Corporation, Forging and Casting Division, Detroit 20, Mich.*

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Allegheny Ludlum

AL® FINE TOOL STEELS SINCE 1854

SCRAP PRICES *(Effective May 20, 1958)*

Pittsburgh

No. 1 hvy. melting	$35.00 to $36.00
No. 2 hvy. melting	31.00 to 32.00
No. 1 dealer bundles	35.00 to 36.00
No. 1 factory bundles	39.00 to 40.00
No. 2 bundles	27.00 to 28.00
No. 1 busheling	35.00 to 36.00
Machine shop turn.	13.00 to 14.00
Mixed bor. and ms. turn.	13.00 to 14.00
Shoveling turnings	17.00 to 18.00
Cast iron borings	17.00 to 18.00
Low phos. punch'gs plate	39.00 to 40.00
Heavy turnings	32.00 to 33.00
No. 1 RR hvy. melting	38.00 to 39.00
Scrap rails, random lgth.	50.00 to 51.00
Rails 2 ft and under	54.00 to 55.00
RR steel wheels	44.00 to 45.00
RR spring steel	44.00 to 45.00
RR couplers and knuckles	44.00 to 45.00
No. 1 machinery cast.	48.00 to 49.00
Cupola cast.	39.00 to 40.00
Heavy breakable cast.	37.00 to 38.00
Stainless	
18-8 bundles and solids	170.00 to 175.00
18-8 turnings	105.00
430 bundles and solids	95.00 to 100.00
410 turnings	45.00

Chicago

No. 1 hvy. melting	$32.00 to $33.00
No. 2 hvy. melting	30.00 to 31.00
No. 1 dealer bundles	32.00 to 33.00
No. 1 factory bundles	38.00 to 39.00
No. 2 bundles	25.00 to 26.00
No. 1 busheling	32.00 to 33.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and turn.	18.00 to 19.00
Shoveling turnings	18.00 to 19.00
Cast iron borings	18.00 to 19.00
Low phos. forge crops	43.00 to 44.00
Low phos. punch'gs plate	39.00 to 40.00
Low phos. 3 ft and under	37.00 to 38.00
No. 1 RR hvy. melting	37.00 to 38.00
Scrap rails, random lgth.	44.00 to 45.00
Rerolling rails	52.00 to 53.00
Rails 2 ft and under	48.00 to 49.00
Locomotive tires cut	45.00 to 46.00
Cut bolsters & side frames	42.00 to 43.00
Angles and splice bars	46.00 to 47.00
RR steel car axles	55.00 to 56.00
RR couplers and knuckles	42.00 to 43.00
No. 1 machinery cast.	44.00 to 45.00
Cupola cast.	37.00 to 38.00
Heavy breakable cast.	35.00 to 36.00
Cast iron brake shoes	35.00 to 36.00
Cast iron wheels	32.00 to 33.00
Malleable	48.00 to 49.00
Stove plate	35.00 to 36.00
Steel car wheels	38.00 to 39.00
Stainless	
18-8 bundles and solids	165.00 to 170.00
18-8 turnings	85.00 to 90.00
430 bundles and solids	95.00 to 100.00
430 turnings	50.00 to 55.00

Philadelphia Area

No. 1 hvy. melting	$33.00 to $35.00
No. 2 hvy. melting	29.00 to 31.00
No. 1 dealer bundles	33.00 to 35.00
No. 2 bundles	23.00 to 24.00
No. 1 busheling	33.00 to 35.00
Machine shop turn.	14.00 to 15.00
Mixed bor. short turn.	15.00 to 16.00
Cast iron borings	16.00 to 17.00
Shoveling turnings	17.00 to 18.00
Clean cast. chem. borings	24.00 to 25.00
Low phos. 5 ft and under	38.00 to 39.00
Low phos. 2 ft and under	39.00 to 40.00
Low phos. punch'gs	39.00 to 40.00
Elec. furnace bundles	34.00 to 35.00
Heavy turnings	28.00 to 29.00
RR steel wheels	42.50 to 43.50
RR spring steel	42.50 to 43.50
Rails 18 in. and under	56.00 to 58.00
Cupola cast.	37.00 to 38.00
Heavy breakable cast.	39.00 to 40.00
Cast iron car wheels	43.00 to 44.00
Malleable	58.00 to 59.00
Unstripped motor blocks	30.00 to 31.00
No. 1 machinery cast.	47.00 to 48.00

Cincinnati

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$29.00 to $30.00
No. 2 hvy. melting	25.00 to 26.00
No. 1 dealer bundles	29.00 to 30.00
No. 2 bundles	19.50 to 20.50
Machine shop turn.	9.00 to 10.00
Mixed bor. and turn.	10.00 to 11.00
Shoveling turnings	11.00 to 12.00
Cast iron borings	10.00 to 11.00
Low phos. 18 in. and under	36.00 to 37.00
Rails, random length	42.00 to 43.00
Rails, 18 in. and under	52.00 to 53.00
No. 1 cupola cast.	37.00 to 38.00
Hvy. breakable cast.	32.00 to 33.00
Drop broken cast.	44.00 to 45.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Cleveland

No. 1 hvy. melting	$32.50 to $33.50
No. 2 hvy. melting	24.50 to 25.50
No. 1 dealer bundles	32.50 to 33.50
No. 1 factory bundles	35.50 to 36.50
No. 2 bundles	21.50 to 22.50
No. 1 busheling	32.50 to 33.50
Machine shop turn.	10.00 to 11.00
Mixed bor. and turn.	14.00 to 15.00
Shoveling turnings	14.00 to 15.00
Cast iron borings	14.00 to 15.00
Cut structural & plates, 2 ft & under	35.00 to 36.00
Drop forge flashings	32.50 to 33.50
Low phos. punch'gs plate	33.50 to 34.50
Foundry steel, 2 ft & under	30.00 to 31.00
No. 1 RR hvy. melting	35.00 to 36.00
Rails 2 ft and under	53.00 to 54.00
Rails 18 in. and under	54.00 to 55.00
Railroad grate bars	14.00 to 15.00
Steel axle turnings	17.00 to 18.00
Railroad cast.	46.00 to 47.00
No. 1 machinery cast.	44.00 to 45.00
Stove plate	40.00 to 41.00
Malleable	58.00 to 59.00
Stainless	
18-8 bundles	160.00 to 165.00
18-8 turnings	85.00 to 90.00
430 bundles	75.00 to 80.00
430 turnings	30.00 to 35.00

Buffalo

No. 1 hvy. melting	$26.00 to $27.00
No. 2 hvy. melting	22.00 to 23.00
No. 1 busheling	26.00 to 27.00
No. 1 dealer bundles	26.00 to 27.00
No. 2 bundles	20.00 to 21.00
Machine shop turn.	10.00 to 11.00
Mixed bor. and turn.	11.00 to 12.00
Shoveling turnings	13.00 to 14.00
Cast iron borings	12.00 to 13.00
Low phos. plate	32.00 to 33.00
Structurals and plate, 2 ft and under	35.00 to 36.00
Scrap rails, random lgth.	39.00 to 40.00
Rails 2 ft and under	49.00 to 50.00
RR steel wheels	36.00 to 37.00
RR spring steel	32.00 to 33.00
RR couplers and knuckles	32.00 to 33.00
No. 1 machinery cast.	43.00 to 44.00
No. 1 cupola cast.	39.00 to 40.00

St. Louis

No. 1 hvy. melting	$32.00 to $33.00
No. 2 hvy. melting	30.00 to 31.00
No. 1 dealer bundles	33.00 to 34.00
No. 2 bundles	23.00 to 24.00
Machine shop turn.	15.00 to 16.00
Cast iron borings	18.00 to 19.00
Shoveling turnings	18.00 to 19.00
No. 1 RR hvy. melting	35.00 to 36.00
Rails, random lengths	42.00 to 43.00
Rails, 18 in. and under	48.00 to 49.00
Angles and splice bars	43.00 to 44.00
Std. steel car axles	47.00 to 48.00
RR specialties	38.00 to 39.00
Cupola cast.	43.00 to 44.00
Heavy breakable cast.	32.00 to 33.00
Cast iron brake shoes	35.00 to 36.00
Stove plate	37.00 to 38.00
Cast iron car wheels	35.00 to 36.00
Rerolling rails	47.00 to 48.00
Unstripped motor blocks	34.00 to 35.00

Birmingham

No. 1 hvy. melting	$30.00 to $31.00
No. 2 hvy. melting	25.00 to 26.00
No. 1 dealer bundles	30.00 to 31.00
No. 2 bundles	18.00 to 19.00
No. 1 busheling	30.00 to 31.00
Machine shop turn.	21.00 to 22.00
Shoveling turnings	22.00 to 23.00
Cast iron borings	12.00 to 13.00
Electric furnace bundles	34.00 to 35.00
Elec. furnace, 3 ft & under	32.00 to 33.00
Bar crops and plate	36.00 to 37.00
Structural and plate, 2 ft	35.00 to 36.00
No. 1 RR hvy. melting	32.00 to 33.00
Scrap rails, random lgth.	42.00 to 43.00
Rails, 18 in. and under	46.00 to 47.00
Angles & splice bars	38.00 to 39.00
Rerolling rails	46.00 to 47.00
No. 1 cupola cast.	48.00 to 49.00
Stove plate	48.00 to 49.00
Charging box cast.	22.00 to 23.00
Cast iron car wheels	34.00 to 35.00
Unstripped motor blocks	38.00 to 39.00

Youngstown

No. 1 hvy. melting	$36.00 to $37.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 dealer bundles	36.00 to 37.00
No. 2 bundles	25.00 to 26.00
Machine shop turn.	12.50 to 13.50
Shoveling turnings	17.50 to 18.50
Cast iron borings	17.50 to 18.50
Low phos. plate	37.00 to 38.00

New York

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$25.00 to $26.00
No. 2 hvy. melting	22.00 to 23.00
No. 2 dealer bundles	15.00 to 16.00
Machine shop turn.	7.00 to 8.00
Mixed bor. and turn.	10.00 to 11.00
Shoveling turnings	10.00 to 11.00
Clean cast. chem. borings	22.00 to 23.00
No. 1 machinery cast.	32.00 to 33.00
Mixed yard cast.	30.00 to 31.00
Charging box cast.	31.00 to 32.00
Heavy breakable cast.	30.00 to 31.00
Unstripped motor blocks	22.00 to 23.00
Stainless	
18-8 prepared solids	135.00 to 140.00
18-8 turnings	45.00 to 50.00
430 prepared solids	65.00 to 70.00
430 turnings	20.00 to 25.00

Detroit

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$24.00 to $25.00
No. 2 hvy. melting	19.00 to 20.00
No. 1 dealer bundles	23.00 to 24.00
No. 2 bundles	15.00 to 16.00
No. 1 busheling	24.00 to 25.00
Drop forge flashings	23.00 to 24.00
Machine shop turn.	6.00 to 7.00
Mixed bor. and turn.	7.00 to 8.00
Shoveling turnings	8.00 to 9.00
Cast iron borings	8.00 to 9.00
Low phos. punch'gs plate	23.00 to 24.00
No. 1 cupola cast.	34.00 to 35.00
Heavy breakable cast.	24.00 to 25.00
Mixed cupola cast.	32.00 to 33.00
Automotive cast.	33.00 to 34.00
Stainless	
18-8 bundles and solids	155.00 to 160.00
18-8 turnings	55.00 to 60.00
430 bundles and solids	70.00 to 75.00
410 turnings	20.00 to 25.00

Boston

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$23.00 to $24.00
No. 2 hvy. melting	18.00 to 19.00
No. 1 dealer bundles	23.00 to 24.00
No. 2 bundles	14.00 to 15.00
No. 1 busheling	23.00 to 24.00
Machine shop turn.	3.00 to 4.00
Mixed bor. and short turn.	3.00 to 4.00
Shoveling turnings	5.00 to 6.00
Clean cast. chem. borings	14.00 to 15.00
No. 1 machinery cast.	31.00 to 32.00
Mixed cupola cast.	26.00 to 27.00
Heavy breakable cast.	27.00 to 28.00
Stove plate	26.00 to 27.00
Unstripped motor blocks	22.00 to 23.00

San Francisco

No. 1 hvy. melting	$32.00
No. 2 hvy. melting	30.00
No. 1 dealer bundles	28.00
No. 2 bundles	22.00
Machine shop turn.	15.00
Cast iron borings	15.00
No. 1 RR hvy. melting	32.00
No. 1 cupola cast.	45.00

Los Angeles

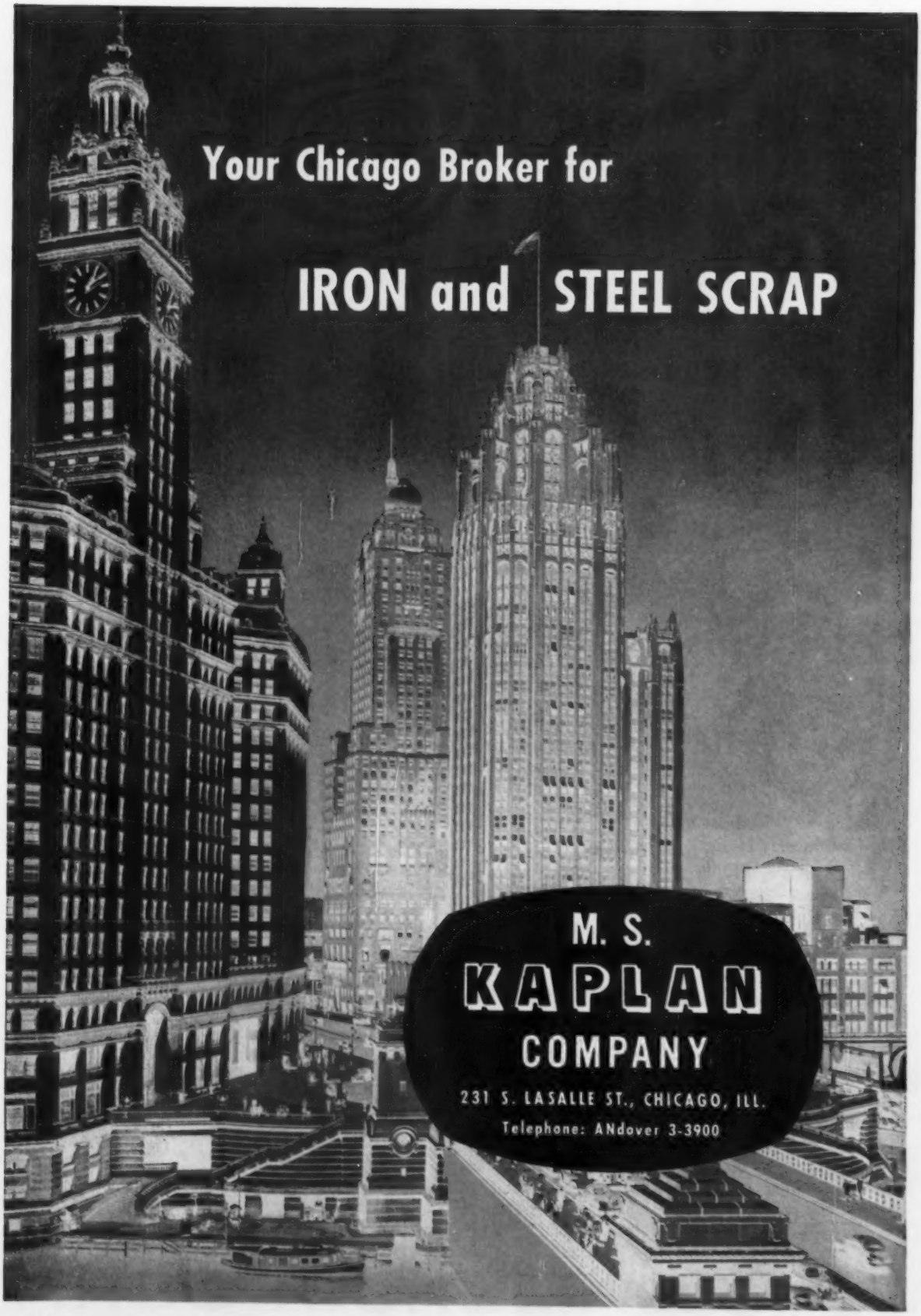
No. 1 hvy. melting	$28.00 to $30.00
No. 2 hvy. melting	26.00 to 28.00
No. 1 dealer bundles	24.00 to 26.00
No. 2 bundles	13.00
Machine shop turn.	9.00
Shoveling turnings	11.00
Cast iron borings	11.00
Elec. furn. 1 ft and under (foundry)	39.00 to 41.00
No. 2 RR hvy. melting	32.00
No. 1 cupola cast.	41.00

Seattle

No. 1 hvy. melting	$30.00
No. 2 hvy. melting	28.00
No. 2 bundles	22.00
No. 1 cupola cast.	36.00
Mixed yard cast.	36.00

Hamilton, Ont.

No. 1 hvy. melting	$30.00
No. 2 hvy. melting	26.00
No. 1 dealer bundles	30.00
No. 2 bundles	23.00
Mixed steel scrap	25.00
Busheling	20.00
Bush., new fact., prep'd	30.00
Bush., new fact., unprep'd	24.00
Machine shop turn.	15.00
Short steel turn.	19.00
Mixed bor. and turn.	15.00
Rails, rerolling	39.00
Cast scrap	$45.00 to 50.00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Congress Shifts On Tariff Hikes

More liberal trade policies gain ground in Congress.

Seaton bill, which once appeared to have little chance, now looks more likely. It may be that or nothing.

▪ The outlook isn't encouraging for domestic nonferrous producers asking more protection from imports. The tide in Washington seems to be shifting in favor of the Administration's stand for freer trade.

The Nixon stoning in South America didn't help. Observers say influential congressmen and executive officials are convinced it was partly due to the prospects of higher tariffs on lead, zinc, copper, and oil.

Ike's Stock Up—Also, the President seems to have gathered more strength in the House than had been expected. The Ways and Means Committee has reached informal agreement on the extension of Reciprocal Trade Agreements.

It suggests a five-year extension, as the President asked, and gives him almost as much tariff-cutting power as he requested. It would permit the President to cut tariffs 25 pct over five years, and drop to 50 pct ad valorem any rates above that. Also, he could cut all ad valorem rates by 2 pct. Eisenhower had asked for 3 pct.

Quotas Rejected — The general attitude seemed to be how to placate "protectionists" just enough to get the bill through, rather than how to solve their problem.

An amendment to fix import quotas on copper, lead, zinc, tungsten, fluorspar, and oil was rejected. The only offering of any consequence made to protectionists is to give Congress power to override the President if he rejects Tariff Commission recommendations. But it requires two-third majority, considered almost impossible to muster.

The battle isn't over yet. Some observers say opponents may be able to hold up the bill long enough for the current extension to run out on June 30. The House committee hasn't decided whether to report the bill out "closed." If it does, no amendment can be made without referring the bill back to committee.

Tougher in Senate—In any case, the Senate is sure to be a tougher nut for the administration to crack. The final decisions are likely to be made in joint session of the committees of the House and Senate.

After a recent meeting of the National Industrial Conference Board, a government spokesman said privately that the administration intends to fight for the Seaton Subsidies Bill all the way, and thinks it has a good chance of passing.

Better Than Nothing? — The chances for a slightly modified Seaton Bill seem to be improving, but not because industry likes it any better. With the President sitting on the multiple recommendations of the Tariff Commission, and liberal trade exponents gaining strength, it may be the only way out. Some opponents may embrace it as simply better than nothing.

The bill appears to be fairly well accepted among consumers. They just aren't talking for publication One large lead consumer favors the plan because, he says (1) it would be the quickest and cheapest way to correct the market, and (2) it could put the burden of cutbacks on imports. He says with subsidies, domestic producers could afford to knock prices down to where it would become unprofitable for marginal importers.

Lead

The drop in the U. S. lead price, ½¢ per lb May 14, seems to have stabilized the domestic market somewhat. Buying hasn't increased. But London appears to have ignored the U. S. move.

The spread between the U. S. and London is now about 2½¢, just about the cost of moving metal from there to U. S. markets, including inland freight.

Aluminum

Dynamic Metals, Inc., is planning to build a $1 to $2 million plant for the production of foam aluminum in Houston. The company says it is discussing the possibility of buying molten aluminum with "a major aluminum producer."

However, none of the Big Three domestic producers has a refinery in the Houston area.

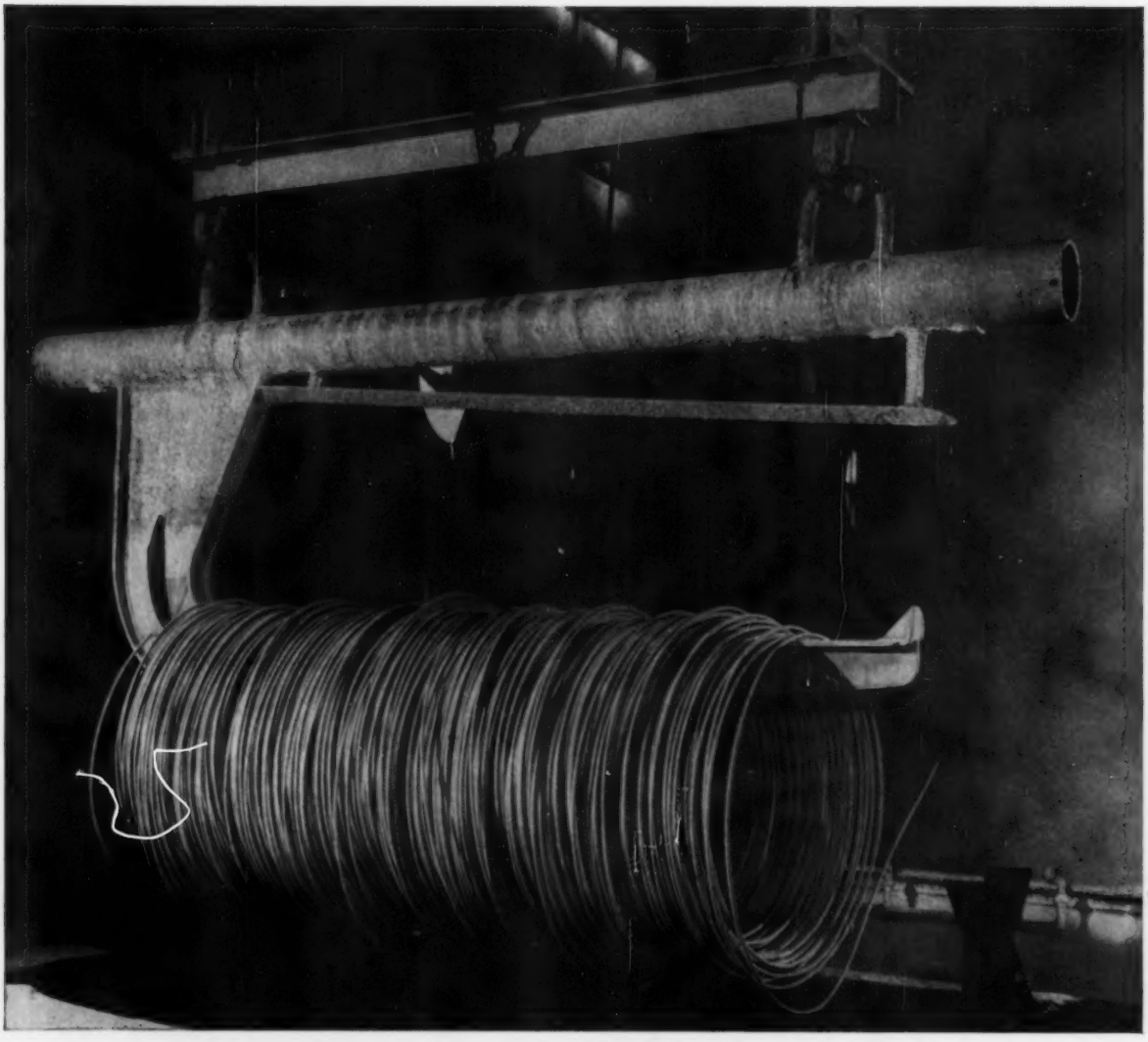
Tin prices for the week: May 14—94.50; May 15—94.875; May 16—94.375; May 19—94.25; May 20—94.25.*

*Estimate

Primary Prices

(cents per lb)	Current price	last price	date of change
Aluminum pig	24.00	26.00	4/1/58
Aluminum ingot	26.10	28.10	4/1/58
Copper (E)	29.00	27.00	1/13/58
Copper (CS)	23.75	23.50	4/23/58
Copper (L)	25.00	27.00	1/13/58
Lead, St. L.	11.30	11.80	5/14/58
Lead, N. Y.	11.50	12.00	5/14/58
Magnesium ingot	30.00	34.00	5/13/58
Magnesium pig	25.25	33.75	5/13/58
Nickel	74.00	84.50	12/6/56
Titanium sponge	185-200	200-250	4/1/58
Zinc, E. St. L.	10.00	10.50	7/1/57
Zinc, N. Y.	10.50	11.00	7/1/57

ALUMINUM: 99% ingot frt allwd. COPPER: (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. LEAD: common grade. MAGNESIUM: 99.8% pig Velasco, Tex. NICKEL: Port Colbourne, Canada. ZINC: prime western. TIN: see above; other primary prices, pg. 190.



Closeup of a Monel pickling hook in the Wire Draw Department, the Timken Roller Bearing Co., Gambrinus Plant, Canton, Ohio. Pickling is in sulphuric acid up to 16%, at 180°F. Loads vary from 1700 to 2700 pounds.

9 years of acid service...
This Monel hook looks as good as new!

See this hook? For 9 years it's been dipping wire into sulphuric acid solution – no repairs, no letup.

When the Timken Company started up this pickling line in 1949, specifying engineers wanted pickling hooks made of a strong, acid resisting metal. They chose Monel* nickel-copper alloy. It has excellent corrosion resistance – can't weaken by dezincifying.

This fabricated hook will last a lot longer, too

It's stronger than structural steel. If damaged, it's economically repaired.

Monel alloy saves replacements in other pickling equipment, too. In slings, baskets, chains, tie rods, Monel alloy's unique combination of corrosion resistance ... strength ... ductility ... easy welding ... really pays off.

You'll find a lot of useful information about Monel alloy pickling equipment in the illustrated handbook, "Equipping the Pickle House for Greater Production at Lower Cost." Write for it. *Registered trademark

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street New York 5, N. Y.

INCO NICKEL ALLOYS

NONFERROUS PRICES

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. ship. pt., frt. allowed)

Flat Sheet (Mill Finish) and Plate

("F" temper except 6061-0)

Alloy	.032	.081	.136-.249	.250-3.
1100, 3003	44.6	43.3	41.1	41.7
5052	52.0	46.9	45.2	44.4
6061-0	49.4	45.0	43.2	43.1

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6- 8	45.0-46.8	56.4-62.1
12-14	45.7-47.2	59.3-63.8
24-26	49.0-49.5	70.1-74.6
36-38	56.0-58.6	94.2-97.6

Screw Machine Stock—2011-T-3

Size*	½	⅝-⅞	⅞-1	1¼-1½
Price	61.0	60.5	59.0	58.6

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
.019 gage	$1.411	$1.854	$2.353	$2.822
.024 gage	1.762	2.349	2.937	3.534

MAGNESIUM

(F.o.b. shipping Pt., carload frt. allowed)

Sheet and Plate

Type↓ Gage→	.250 3.00	.250-2.00	.188	.081	.032
AZ31B Stand. Grade	.....	67.9	69.0	77.9	108.1
AZ31B Spec.	.....	93.3	95.7	108.7	171.3
Tread Plate	.....	70.6	71.7	.....	.....
Tooling Plate	73.0	.....	.....	.....	.....

Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade. (AZ31C)	69.6	70.7	75.6	89.2
Spec. Grade... (AZ31B)	84.6	85.7	90.6	104.2

Alloy Ingot

AZ91B (Die Casting) ..... 27.25 (delivered)
AZ63A, AZ92A, AZ91C (Sand Casting) 40.75 (Velasco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices, f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	126	106	128
Strip, CR	124	108	138
Rod, bar, HR	107	89	109
Angles, HR	107	89	109
Plates, HR	120	105	121
Seamless tube	157	129	200
Shot, blocks	...	87	...

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	48.13	.....	45.36	48.32
Brass, 70/30	42.69	43.23	43.63	45.60
Brass, Low	44.90	45.44	44.84	47.71
Brass, R L	45.67	46.21	45.61	48.48
Brass, Naval	47.07	.....	41.38	50.48
Munts Metal	45.19	.....	41.00	.....
Comm. Bs.	46.98	47.52	46.92	49.84
Mang. Bz.	50.81	.....	44.91	.....
Phos. Bz. 5%	67.17	.....	67.67	.....

Free Cutting Brass Rod 29.53

TITANIUM

(Freight included in 5000 lbs)

Sheet and strip, commercially pure, $8.50-$10.10; alloy, $15.95; Plate, HR, commercially pure, $6.00-$6.75; alloy, $8.75-$9.50. Wire, rolled and/or drawn, commercially pure, $6.50-$7.00; alloy, $10.00-$11.50; Bar, HR or forged, commercially pure, $5.25-$5.50; alloy, $6.25-$6.35; billets, HR, commercially pure, $4.10-$4.35; alloy, $4.10-$4.20.

PRIMARY METAL

(Cents per lb unless otherwise noted)

Antimony, American, Laredo, Tex.. 29.50
Beryllium aluminum 5% Be, Dollar per lb contained Be $74.75
Beryllium copper, per lb conta'd Be. $43.00
Beryllium 97% lump or beads, f.o.b. Cleveland, Reading $71.50
Bismuth, ton lots ..... $ 2.25
Cadmium, del'd ..... $ 1.55
Calcium, 99.9% small lots ..... $ 4.55
Chromium, 99.8% metallic basis... $ 1.31
Cobalt, 97-99% (per lb)... $2.00 to $2.07
Germanium, per gm, f.o.b. Miami, Okla., refined ..... 39.50 to 50.00
Gold, U. S. Treas., per troy oz..... $35.00
Indium, 99.9%, dollars per troy oz.. $ 2.25
Iridium, dollars per troy oz.... $80 to $90
Lithium, 98% ..... $11.00 to $14.00
Magnesium, sticks, 100 to 500 lb.... 59.00
Mercury, dollars per 76-lb flask, f.o.b. New York ..... $228 to $231
Nickel oxide sinter at Copper Cliff, Ont., contained nickel 71.25
Palladium, dollars per troy oz... $19 to $21
Platinum, dollars per troy oz... $67 to $70
Rhodium ..... $120.00 to $125.00
Silver ingots (¢ per troy oz.)..... 88.625
Thorium, per kg. $43.00
Vanadium ..... $ 3.45
Zirconium sponge ..... $ 5.00

Remelted Metals

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot
- No. 115 ..... 25.25
- No. 120 ..... 24.25
- No. 123 ..... 23.50

80-10-10 ingot
- No. 305 ..... 29.25
- No. 315 ..... 27.25

88-10-2 ingot
- No. 210 ..... 36.25
- No. 215 ..... 32.00
- No. 245 ..... 28.75

Yellow ingot
- No. 405 ..... 21.25

Manganese bronze
- No. 421 ..... 23.00

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
- 0.30 copper max. 24.00-24.25
- 0.60 copper max. 23.75-24.00

Piston alloys (No. 122 type).. 23.25-24.25
No. 12 alum. (No. 2 grade)... 21.00-21.75
108 alloy 21.50-22.25
195 alloy 24.00-25.50
13 alloy (0.60 copper max.)... 23.75-24.00
AXS-679 (1 pct zinc) 21.25-22.25

Steel deoxidizing aluminum notch bar granulated or shot

Grade 1—95-97½% 22.50-23.50
Grade 2—92-95% 21.00-21.75
Grade 3—90-92% 20.00-20.75
Grade 4—85-90% 17.50-18.50

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	21	20½
Yellow brass	16⅛	14½
Red brass	18⅝	17⅝
Comm. bronze	19¼	18½
Mang. bronze	14⅞	14⅛
Yellow brass rod ends	15⅝	

Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	20
No. 2 copper wire	18½
Light copper	16¼
*Refinery brass	18
Copper bearing material	17¼

*Dry copper content.

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	20
No. 2 copper wire	18½
Light copper	16¼
No. 1 composition	18½
No. 1 comp. turnings	18
Hvy. yellow brass solids	13
Brass pipe	15
Radiators	14¼

Aluminum

Mixed old cast.	12 —13
Mixed new clips	14½ —15½
Mixed turnings, dry	12½ —13½

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Copper and Brass

No. 1 copper wire	17¾ —18¼
No. 2 copper wire	15¾ —16¼
Light copper	13¾ —14¼
Auto radiators (unsweated)	11 —11⅓
No. 1 composition	14½ —15
No. 1 composition turnings	13½ —14
Cocks and faucets	12 —12⅓
Clean heavy yellow brass	10 —10½
Brass pipe	12 —12½
New soft brass clippings	13 —13½
No. 1 brass rod turnings	10½ —11

Aluminum

Alum. pistons and struts	5 — 5½
Aluminum crankcases	9½ —10
1100 (2S) aluminum clippings	12½ —13
Old sheet and utensils	9½ —10
Borings and turnings	6 — 6½
Industrial castings	9½ —10
2024 (24S) clippings	11 —11½

Zinc

New zinc clippings	4 — 4½
Old zinc	3 — 3¼
Zinc routings	1¾ — 2
Old die cast scrap	1½ — 1⅝

Nickel and Monel

Pure nickel clippings	42-45
Clean nickel turnings	37-40
Nickel anodes	42-45
Nickel rod ends	42-45
New Monel clippings	28-29
Clean Monel turnings	20-23
Old sheet Monel	25-26
Nickel silver clippings, mixed	18
Nickel silver turnings, mixed	15

Lead

Soft scrap lead	7½ — 8
Battery plates (dry)	2¾ — 3
Batteries, acid free	1¾ — 2

Miscellaneous

Block tin	75 —76
No. 1 pewter	59 —60
Auto babbitt	39 —40
Mixed common babbitt	11 —11½
Solder joints	14½ —15
Siphon tops	42
Small foundry type	12 —12¼
Monotype	12 —12¼
Lino. and stereotype	11 —11¼
Electrotype	10 —10¼
Hand picked type shells	7 — 7½
Lino. and Stereo. dross	3 — 3¼
Electro. dross	2½ — 2¾

(Effective May 19, 1958)

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PILING	SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			$114.00 *B3*		5.325 *B3*	7.80 *B3*	5.325 *B3*						
	Buffalo, N. Y.	$77.50 *R3, B3*	$96.00 *R3, B3*	$114.00 *R3, B3*	6.225 *B3*	5.325 *B3*	7.80 *B3*	5.325 *B3*	4.925 *R3, B3*	7.15 *S10*	7.325 *B3*			
	Phila., Pa.									7.70 *P15*				
	Harrison, N. J.													15.05 *C11*
	Conshohocken, Pa.		$101.00 *A2*	$121.00 *A2*					4.975 *A2*		7.325 *A2*			
	New Bedford, Mass.									7.60 *R6*				
	Johnstown, Pa.	$77.50 *B3*	$96.00 *B3*	$114.00 *B3*		5.325 *B3*	7.80 *B3*							
	Boston, Mass.									7.70 *T8*				15.40 *T8*
	New Haven, Conn.									7.60 *D1*				
	Baltimore, Md.									7.15 *T8*				
	Phoenixville, Pa.					5.325 *P2*		5.325 *P2*						
	Sparrows Pt., Md.								4.925 *B3*		7.325 *B3*			
	New Britain, Bridgeport, Wallingford, Conn.			$114.00 *N8*						7.60 *W1,S7*				
	Pawtucket, R. I. Worcester, Mass.									7.70 *N7* 7.70 *A5*				15.40 *N7* 15.20 *T8*
MIDDLE WEST	Alton, Ill.								5.125 *L1*					
	Ashland, Ky.								4.925 *A7*					
	Canton-Massillon, Dover, Ohio		$98.50 *R3*	$114.00 *R3, T5*						7.15 *G4*		10.45 *G4*		14.85 *C11*
	Chicago, Ill. Franklin Park, Ill. Evanston, Ill.	$77.50 *U1, R3*	$96.00 *U1, R3,W8*	$114.00 *U1, R3,W8*	6.225 *U1*	5.275 *U1, W8,P13*	7.75 *U1,Y1 W8*	5.275 *U1*	4.925 *W8, N4,A1*	7.25 *A1,T8 M8*			8.10 *W8, S9,I3*	15.05 *A1, S9,G4*
	Cleveland, Ohio									7.15 *A5,J3*		10.45 *A5*	8.10 *J3*	
	Detroit, Mich.			$114.00 *R5*					5.025 *G3, M2*	7.25 *M2,D1, D2,G3,P11*	7.425 *G3*	10.60 *D2* 10.55 *G3*	8.10 *G3*	
	Anderson, Ind.									7.15 *G4*				
	Duluth, Minn.													
	Gary, Ind. Harbor, Indiana	$77.50 *U1*	$96.00 *U1*	$114.00 *U1, Y1*		5.275 *U1, I3*	7.75 *U1, I3*	5.275 *I3*	4.925 *U1, I3,Y1*	7.15 *Y1*	7.325 *U1, I3,Y1*	10.60 *Y1*	8.10 *U1, Y1*	
	Sterling, Ill.	$77.50 *N4*				5.275 *N4*			5.025 *N4*					
	Indianapolis, Ind.									7.30 *J3*				15.20 *J3*
	Newport, Ky.												8.10 *A9*	
	Middletown, Ohio													
	Niles, Warren, Ohio Sharon, Pa.		$96.00 *S1, C10*	$114.00 *C10,S1*					4.925 *R3, S1*	7.15 *R3,T4 S1*	7.325 *R3, S1*	10.50 *S1* 10.45 *R3*	8.10 *S1*	15.05 *S1*
	Owensboro, Ky.	$77.50 *G5*	$96.00 *G5*	$114.00 *G5*										
	Pittsburgh, Pa. Midland, Pa. Butler, Pa. Aliquippa, Pa.	$77.50 *U1, P6*	$96.00 *U1, C11,P6*	$114.00 *U1, C11,B7*	6.225 *U1*	5.275 *U1, J3*	7.75 *U1, J3*	5.275 *U1*	4.925 *P6*	7.15 *J3,B4*			8.10 *S9*	15.05 *S9*
	Weirton, Wheeling, Follansbee, W. Va				6.225 *W3*	5.275 *W3*		5.275 *W3*	4.925 *W3*	7.15 *W3,F3*	7.325 *W3*	10.50 *W3*		
	Youngstown, Ohio	$77.50 *R3*	$96.00 *Y1, C10*	$114.00 *Y1*			7.75 *Y1*			7.15 *Y1,J3*	7.325 *U1, Y1*	10.65 *Y1*	8.10 *U1, Y1*	15.05 *J3* 10.65 *Y1*
WEST	Fontana, Cal.	$88.00 *K1*	$105.50 *K1*	$135.00 *K1*		6.075 *K1*	8.55 *K1*	6.225 *K1*	5.675 *K1*	9.80 *K1*				
	Geneva Utah		$96.00 *C7*			5.275 *C7*	7.75 *C7*							
	Kansas City, Mo.					5.375 *S2*	7.85 *S2*						8.35 *S2*	
	Los Angeles, Torrance, Cal.		$105.50 *B2*	$134.00 *B2*		5.975 *C7, B2*	8.45 *B2*		5.675 *C7, B2*	9.05 *J3* 9.20 *C1*			9.30 *B2*	17.25 *J3*
	Minnequa, Colo.					5.575 *C6*			6.025 *C6*	9.10 *K1*				
	Portland, Ore.					6.025 *O2*								
	San Francisco, Niles, Pittsburg, Cal.		$105.50 *B2*			5.925 *B2*	8.40 *B2*		5.675 *C7, B2*					
	Seattle, Wash.		$109.50 *B2*			6.025 *B2*	8.50 *B2*		5.925 *B2*					
SOUTH	Atlanta, Ga.					5.475 *A8*			4.925 *A8*					
	Fairfield, Ala. City, Birmingham, Ala.	$77.50 *T2*	$96.00 *T2*			5.275 *T2, R4,C16*	7.75 *T2*		4.925 *T2, R3,C16*		7.325 *T2*			
	Houston, Lone Star, Texas		$101.00 *S2*	$119.00 *S2*		5.375 *S2*	7.85 *S2*						8.35 *S2*	

(Effective May 19, 1958)

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		SHEETS								WIRE ROD	TINPLATE†		BLACK PLATE
		Hot-rolled 18 ga. & hvyr.	Cold-rolled	Galvanized	Enameling	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Cokes* 1.25-lb. base box	Electro* 0.25-lb. base box	Hollowware Enameling 29 ga.
EAST	Bethlehem, Pa.												
	Buffalo, N. Y.	4.925 *B3*	6.05 *B3*				7.275 *B3*	8.975 *B3*		6.15 *W6*	† Special coated mfg. terne deduct 50¢ from 1.25-lb. coke base box price. Can-making quality blackplate 55 to 128 lb. deduct $2.20 from 1.25 lb. coke base box. * COKES: 1.50-lb. add 25¢. ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add $1.00. Differential 1.00 lb. /0.25 lb. add 65¢.		
	Claymont, Del.												
	Coatesville, Pa.												
	Conshohocken, Pa.	4.975 *A2*	6.10 *A2*				7.325 *A2*						
	Harrisburg, Pa.												
	Hartford, Conn.												
	Johnstown, Pa.									6.15 *B3*			
	Fairless, Pa.	4.975 *U1*	6.10 *U1*				7.325 *U1*	9.025 *U1*			$10.15 *U1*	$8.85 *U1*	
	New Haven, Conn.												
	Phoenixville, Pa.												
	Sparrows Pt., Md.	4.925 *B3*	6.05 *B3*	6.60 *B3*			7.275 *B3*	8.975 *B3*	9.725 *B3*	6.25 *B3*	$10.15 *B3*	$8.85 *B3*	
	Worcester, Mass.									6.45 *A5*			
	Trenton, N. J.												
MIDDLE WEST	Alton, Ill.									6.35 *L1*			
	Ashland, Ky	4.925 *A7*		6.60 *A7*	6.625 *A7*								
	Canton-Massillon, Dover, Ohio			6.60 *R3, R1*									
	Chicago, Joliet, Ill.	4.925 *W8, A1*					7.275 *U1*			6.15 *A5, R3, W8, N4, K2*			
	Sterling, Ill.									6.25 *N4, K2*			
	Cleveland, Ohio	4.925 *R3, J3*	6.05 *R3, J3*		6.625 *R3*		7.275 *R3, J3*	8.975 *R3, J3*		6.15 *A5*			
	Detroit, Mich.	5.025 *G3, M2*	6.15 *G3* 6.05 *M2*				7.375 *G3*	9.075 *G3*					
	Newport, Ky	4.925 *A1*	6.05 *A1*										
	Gary, Ind. Harbor, Indiana	4.925 *U1, I3, Y1*	6.05 *U1, I3, Y1*	6.60 *U1, I3*	6.625 *U1, I3, Y1*	7.00 *U1*	7.275 *U1, Y1, I3*	8.975 *U1, Y1*		6.15 *Y1*	$10.05 *U1, Y1*	$8.75 *I3, U1, Y1*	7.50 *U1, Y1*
	Granite City, Ill.	5.125 *G2*	6.25 *G2*	6.80 *G2*	6.825 *G2*							$8.85 *G2*	7.60 *G2*
	Kokomo, Ind.			6.70 *C9*						6.25 *C9*			
	Mansfield, Ohio		6.05 *E2*			7.00 *E2*							
	Middletown, Ohio		6.05 *A7*	6.60 *A7*	6.625 *A7*	7.00 *A7*							
	Niles, Warren, Ohio Sharon, Pa.	4.925 *R3, N3, S1*	6.05 *R3*	6.60 *R3*	6.625 *N3, S1*	7.00 *N3, S1, R3*	7.275 *R3*	8.975 *S1, R3*				$8.75 *R3*	
	Pittsburgh, Pa. Midland, Pa. Butler, Pa. Donora, Pa. Aliquippa, Pa.	4.925 *U1, J3, P6*	6.05 *U1, J3, P6*	6.60 *U1, J3*	6.625 *U1*		7.275 *U1, J3*	8.975 *U1, J3*	9.725 *U1*	6.15 *A5, J3, P6*	$10.05 *U1, J3*	$8.75 *U1, J3*	7.50 *U1, J3*
	Portsmouth, Ohio	4.925 *P7*	6.05 *P7*							6.15 *P7*			
	Weirton, Wheeling, Follansbee, W. Va.	4.925 *W3, W5*	6.05 *W3, F3, W5*	6.60 *W3, W5*		7.00 *W3, W5*	7.275 *W3*	8.975 *W3*			$10.05 *W5, W3*	$8.75 *W5, W3*	7.50 *W5*
	Youngstown, Ohio	4.925 *U1, Y1*	6.05 *Y1*		6.625 *Y1*		7.275 *Y1*	8.975 *Y1*		6.15 *Y1*			
WEST	Fontana, Cal.	5.675 *K1*	7.30 *K1*				8.025 *K1*	10.275 *K1*			$10.80 *K1*	$9.50 *K1*	
	Geneva, Utah	5.025 *C7*											
	Kansas City, Mo.									6.40 *S2*			
	Los Angeles, Torrance, Cal.									6.95 *B2*			
	Minnequa, Colo.									6.40 *C6*			
	San Francisco, Niles, Pittsburgh, Cal.	5.625 *C7*	7.00 *C7*	7.35 *C7*						6.95 *C7*	$10.80 *C7*	$9.50 *C7*	
	Seattle, Wash.												
SOUTH	Atlanta, Ga.												
	Fairfield, Ala. Alabama City, Ala.	4.925 *T2, R3*	6.05 *T2, R3*	6.60 *T2, R3*	6.625 *T2*					6.15 *T2, R3*	$10.15 *T2*	$8.85 *T2*	
	Houston, Tex.									6.40 *S2*			

(Effective May 19, 1958)

STEEL PRICES

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		BARS						PLATES				WIRE
		Carbon† Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfrs'. Bright
EAST	Bethlehem, Pa.				6.475 *B3*	8.775 *B3*	7.925 *B3*					
	Buffalo, N. Y.	5.425 *R3,B3*	5.425 *R3,B3*	7.35 *B5*	6.475 *B3,R3*	8.775 *B3,B5*	7.925 *B3*	5.10 *B3*		7.20 *B3*		7.65 *W6*
	Claymont, Del.							5.10 *C4*		7.20 *C4*	7.625 *C4*	
	Coatesville, Pa.							5.10 *L4*		7.20 *L4*	7.625 *L4*	
	Conshohocken, Pa.							5.10 *A2*	6.175 *A2*	7.20 *A2*	7.625 *A2*	
	Harrisburg, Pa.							5.10 *P2*	6.275 *P2*			
	Milton, Pa.	5.575 *M7*	5.575 *M7*									
	Hartford, Conn.			7.80 *R3*		9.075 *R3*	7.925 *B3*					
	Johnstown, Pa.	5.425 *B3*	5.425 *B3*		6.475 *B3*			5.10 *B3*		7.20 *B3*	7.625 *B3*	7.65 *B3*
	Fairless, Pa.	5.575 *U1*	5.575 *U1*		6.625 *U1*							
	Newark, N. J. Camden, N. J.			7.75 *W10* 7.75 *P10*		8.95 *W10* 8.95 *P10*						
	Bridgeport, Conn. Putnam, Conn. Willimantic, Conn.			7.85 *W10* 7.80 *J3*	6.55 *N8*	8.925 *N8*						
	Sparrows Pt., Md.		5.425 *B3*					5.10 *B3*		7.20 *B3*	7.625 *B3*	7.75 *B3*
	Palmer, Worcester, Readville, Mass. Mansfield, Mass.			7.85 *B5,C14*		9.075 *A5,B5*						7.95 *A5, W6*
	Spring City, Pa.			7.75 *K4*		8.95 *K4*						
MIDDLE WEST	Alton, Ill.	5.625 *L1*										7.85 *L1*
	Ashland,Newport,Ky.							5.10 *A7,A1*		7.20 *A1*		
	Canton, Massillon, Ohio	5.90* *R3*		7.30 *R3,R2*	6.475 *R3,T5*	8.775 *R3,R2, T5*						
	Chicago, Joliet, Waukegan, Ill. Harvey, Ill.	5.425 *U1,R3, W8,N4,P13*	5.425 *U1,R3, N4,P13*	7.30 *A5, W10,W8 B5,L2,N9*	6.475 *U1,R3, W8*	8.775 *A5, W10,W8 L2,N8,B5*	7.925 *U1,W8*	5.10 *U1,A1, W8,13*	6.175 *U1*	7.20 *U1,W8*	7.625 *U1,W8*	7.65 *A5,R3, W8,N4, K2,W7*
	Cleveland, Ohio Elyria, Ohio	5.425 *R3*	5.425 *R3*	7.30 *A5,C13 C18*		8.775 *A5, C13, C18*	7.925 *R3*	5.20 *R3,J3*	6.175 *J3*		7.625 *R3, J3*	7.65 *A5, C13*
	Detroit, Mich.	5.525 *G3*	5.775 *G3*	7.55 *P1* 7.50 *P8,B5*	6.475 *R5* 6.575 *G3*	8.775 *R5* 8.975 *B5,P3, P8*	8.025 *G3*	5.20 *G3*		7.35 *G3*		
	Duluth, Minn.											7.65 *A5*
	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.425 *U1,13, Y1*	5.425 *U1,13, Y1*	7.30 *R3,J3*	6.475 *U1,13, Y1*	8.775 *R3,M4*	7.925 *U1, Y1*	5.10 *U1,13, Y1*	6.175 *J3,13*	7.20 *U1,Y1*	7.625 *U1, Y1,13*	7.75 *M4*
	Granite City, Ill.							5.30 *G2*				
	Kokomo, Ind.		5.525 *C9*									7.75 *C9*
	Sterling, Ill.	5.525 *N4*	5.525 *N4*					5.10 *N4*				7.75 *K2*
	Niles, Warren, Ohio Sharon, Pa.			7.30 *C10*	6.475 *C10,S1*	8.775 *C10*	7.925 *S1*	5.10 *R3,S1*		7.20 *S1*	7.625 *R3, S1*	
	Owensboro, Ky.	5.425 *G5*			6.475 *G5*							
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.425 *U1,J3*	5.425 *U1,J3*	7.30 *A5,B4, R3,J3,C11, W10,S9,C8*	6.475 *U1,J3, C11,B7*	8.775 *A5, W10,R3,S9, C11,C8*	7.925 *U1,J3*	5.10 *U1,J3*	6.175 *U1*	7.20 *U1,J3, B7*	7.625 *U1,J3, B7*	7.65 *A5, J3,P6*
	Portsmouth, Ohio											7.65 *P7*
	Weirton, Wheeling, Follansbee, W. Va.							5.10 *W5*				
	Youngstown, Ohio	5.425 *U1,R3, Y1*	5.425 *U1,R3, Y1*	7.30 *A5,Y1, F2*	6.475 *U1,Y1*	8.775 *Y1,F2*	7.925 *U1,Y1*	5.10 *U1,R3, Y1*		7.20 *Y1*	7.625 *U1, R3,Y1*	7.65 *Y1*
WEST	Emeryville, Cal. Fontana, Cal.	6.175 *J5* 6.125 *K1*	6.175 *J5* 6.125 *K1*		7.525 *K1*		8.625 *K1*	5.90 *K1*		8.00 *K1*	8.425 *K1*	
	Geneva, Utah							5.10 *C7*			7.625 *C7*	
	Kansas City, Mo.	5.675 *S2*	5.675 *S2*		6.725 *S2*		8.175 *S2*					7.90 *S2*
	Los Angeles, Torrance, Cal.	6.125 *C7,B2*	6.125 *C7,B2*	8.75 *R3,P14*	7.525 *B2*	10.75 *P14*	8.625 *B2*					8.00 *B2*
	Minnequa, Colo.	5.875 *C6*	5.875 *C6*					5.95 *C6*				7.90 *C6*
	Portland, Ore.	6.175 *O2*	6.175 *O2*									
	San Francisco, Niles, Pittsburg, Cal	6.125 *C7* 6.175 *B2*	6.125 *C7* 6.175 *B2*				8.675 *B2*					8.00 *C7,C6*
	Seattle Wash.	6.175 *B2,N6*	6.175 *B2*				8.675 *B2*	6.00 *B2*		8.10 *B2*	8.525 *B2*	
SOUTH	Atlanta, Ga.	5.625 *A8*	5.425 *A8*									7.65 *A8*
	Fairfield, Ala. City, Birmingham, Ala.	5.425 *T2,R3, C16*	5.425 *T2,R3, C16*	7.90 *C16*			7.925 *T2*	5.10 *T2,R3*			7.625 *T2*	7.65 *T2,R3*
	Houston, Ft. Worth, Lone Star, Tex.	5.675 *S2*	5.675 *S2*		6.725 *S2*		8.175 *S2*	5.20 *S2* 5.20 *L3*		7.30 *S2*	7.725 *S2*	7.90 *S2*

 * Special Quality (Effective May 19, 1958) † Merchant Quality—Special Quality 35c higher

STEEL PRICES

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angel Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, Ohio
A8 Atlantic Steel Co., Atlanta, Ga.
A9 Acme-Newport Steel Co., Newport, Ky.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
B6 Brook Plant, Wickwire-Spencer Steel Div., Birdsboro, Pa.
B7 A. M. Byers, Pittsburgh
B8 Braeburn Alloy Steel Corp., Braeburn, Pa.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C3 Central Iron & Steel Co., Harrisburg, Pa.
C4 Claymont Products Dept., Claymont, Del.
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, Pittsburgh
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham
C17 Chester Blast Furnace, Inc., Chester, Pa.
C18 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.

D1 Detroit Steel Corp., Detroit
D2 Dearborn Div., Sharon Steel Corp.
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire Steel Co., Mansfield, O.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.
G5 Green River Steel Corp., Owensboro, Ky.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Cal.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.
K4 Keystone Drawn Steel Co., Spring City, Pa.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
M6 Mystic Iron Works, Everett, Mass.
M7 Milton Steel Products Div., Milton, Pa.
M8 Mill Strip Products Co., Evanston, Ill.

N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N3 Niles Rolling Mill Div., Niles, O.
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Carpenter Steel of New England, Inc., Bridgeport, Conn.
N9 Nelson Steel & Wire Co.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P13 Phoenix Mfg. Co., Joliet, Ill.
P14 Pacific Tube Co.
P15 Philadelphia Steel and Wire Corp.

R1 Reeves Steel & Mfg. Co., Dover, O.
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 J. & L. Steel Co., Stainless Div.
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Div., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw and Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S6 Standard Forging Corp., Chicago
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa.
S10 Seneca Steel Service, Buffalo
S11 Southern Electric Steel Co., Birmingham

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T7 Texas Steel Co., Fort Worth
T8 Thompson Wire Co., Boston

U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago
W8 Wisconsin Steel Div., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh
W12 Wallace Barnes Steel Div., Bristol, Conn.

Y1 Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING — **Base discounts (pct) f.o.b. mills. Base price about $280 per net ton.**

	BUTTWELD														SEAMLESS							
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½-3 In.		2 In.		2½ In.		3 In.		3½-4 In.	
STANDARD T. & C.	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**
Sparrows Pt. *B3*	3.25	+12.0	6.25	+8.0	9.75	+3.50	12.25	+2.75	12.75	+1.75	13.25	+1.25	14.75	+1.50								
Youngstown *R3*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50								
Fontana *K1*	+8.25	+23.5	+5.25	+19.5	+1.75	+15.00	0.75	+14.25	1.25	+13.25	1.75	+12.75	3.25	+13.00								
Pittsburgh *J3*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0	1.25	+15.50
Alton, Ill. *L1*	3.25	+12.0	6.25	+8.0	9.75	+3.50	12.25	+2.75	12.75	+1.75	13.25	+1.25	14.75	+1.50								
Sharon *M3*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50								
Fairless *N2*	3.25	+12.0	6.25	+8.0	9.75	+3.50	12.25	+2.75	12.75	+1.75	13.25	+1.25	14.75	+1.50								
Pittsburgh *N1*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0	1.25	+15.50
Wheeling *W5*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50								
Wheatland *W4*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50								
Youngstown *Y1*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0	1.25	+15.50
Indiana Harbor *Y1*	4.25	+11.0	7.25	+7.0	10.75	+2.50	13.25	+1.75	13.25	+0.75	14.25	+0.25	15.75	+1.00								
Lorain *N2*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0	1.25	+15.50
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	7.75	+6.0	11.75	+2.0	14.75	2.50	15.25	1.25	15.75	2.25	16.25	2.75	16.75	1.50								
Youngstown *R3*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50								
Fairless *N2*	7.75	+6.0	11.75	+2.0	14.75	2.50	15.25	1.25	15.75	2.25	16.25	2.75	16.75	1.50								
Fontana *K1*	+3.75		0.25		3.25		3.75		4.25		4.75		5.25									
Pittsburgh *J3*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50	7.25	+8.50
Alton, Ill. *L1*	7.75	+6.0	11.75	+2.0	14.75	2.50	15.25	1.25	15.75	2.25	16.25	2.75	16.75	1.50								
Sharon *M3*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50								
Pittsburgh *N1*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50	7.25	+8.50
Wheeling *W5*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50								
Wheatland *W4*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50								
Youngstown *Y1*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50	7.25	+8.50
Indiana Harbor *Y1*	8.75	+5.0	12.75	+1.0	15.75	3.50	16.25	2.25	16.75	3.25	17.25	3.75	17.75	2.50								
Lorain *N2*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50	7.25	+8.50

Threads only, buttweld and seamless 2½ pt. higher discount. Plain ends, buttweld and seamless, 3-in. and under, 5½ pt. higher discount.
Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1¼, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower d'scounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 10¢ per lb.

(Effective May 19, 1958)

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots for minus 100 mesh

Swedish sponge iron, del. East of Miss. River, ocean bags, 23,000 lb. and over	10.5¢
F.O.B. Riverton or Camden, New Jersey, west of Miss. River	9.5¢
Domestic sponge iron, 98+% Fe, 23,000 lb. and over del'd East of Miss. River	10.5¢
F.O.B. Riverton, New Jersey, West of Miss. River	9.5¢
Canadian sponge iron, del'd in East, carloads	10.5¢
Atomized iron powder, 98% + Fe, 40 mesh,, F.O.B. Easton, Pa., in 100 lb bags	7.7¢
Atomized iron powder, 98% + Fe, F.O.B. Easton, Pa., in 100 lb. bags. Freight allowed east of Miss. River	10.5¢
Atomized iron powder, 98% + Fe. Cutting and scarfing grade, F.O.B. Easton, Pa.	8.5¢
Electrolytic iron, annealed, imported 99.5+% Fe	27.5¢
domestic 99.5+% Fe	36.5¢
Electrolytic iron, unannealed minus 325 mesh, 99+% Fe	57.0¢
Electrolytic iron melting stock, 99.84% pure	27.0¢
Carbonyl iron size 3 to 20 micron, 98%, 99.8+% Fe	88.0¢ to $2.85
Aluminum, freight allowed	38.00¢
Brass, 10 ton lots	31.1¢ to 47.1¢
Copper, electrolytic	41.50¢
Copper, reduced	40.3¢ to 48.8¢
Cadmium, 100-199 lb. 95¢ plus metal value	
Chromium, electrolytic, 99.85% min. Fe. 03 max. Del'd	$5.00
Lead	21.50¢ lb, f.o.b. plant
Manganese f.o.b. Extron, Pa.	46.0¢
Molybdenum, 99%	$3.60 to $3.95
Nickel, chemically precipitated	$1.05
Nickel, unannealed	$1.00
Nickel, annealed	$1.06
Nickel, spherical, unannealed 280	$1.13
Silicon	43.50¢
Solder powder	13¢ plus met. value
Stainless steel, 302	$1.02
Stainless steel, 316	$1.30
Tin	14.00¢ plus metal value
Tungsten, 99% (65 mesh)	$3.15 (nominal)
Zinc, 5000 lb & over	17.5¢ to 30.7¢

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Machine and Carriage Bolts	Full Container Price	30 Containers	20,000 Lb.	40,000 Lb.
	Pct. Discounts			
½" and smaller x 6" and shorter	49	54	58	57
⅝" thru 1" x longer than 6"	35	40	43	45
Rolled thread carriage bolts ½" & smaller x 6" and shorter	49	54	56	57
Lag, all diam. x 6" & shorter	49	54	56	57
Lag, all diam. longer than 6 in.	39	44½	47	48½
Plow bolts, ½" and smaller x 6" and shorter	49	54	56	57

(Add 25 pct for broken case quantities)

Nuts, Hex, HP reg. & hvy.	Full case or Keg price
¾ in. or smaller	60½
⅞ in. to 1 in. inclusive	55½
1⅛ in. to 1½ in. inclusive	58½
1⅝ in. and larger	53½
C. P. Hex, reg. & hvy.	
¾ in. and smaller	60½
⅞ in. to 1½ in. inclusive	55½
1⅝ in. and larger	53½
Hot Galv. Hex Nuts (All Types)	
¾ in. and smaller	46½
Semi-finished Hex Nuts	
⅝ in. or smaller	60½
¾ in. to 1½ in. inclusive	55½
1⅝ in. and larger	53½
(Add 25 pct for broken case or keg quantities)	
Finished	
⅞ in. and smaller	63
Rivets	
	Base per 100 lb
½ in. and larger	$12.25
	Pct. Off List
7/16 in. and smaller	19

Cap Screws *Discount (Packages)*

Full Finished H. C. Heat Treat

	C-1018 Steel Full-Finished Cartons	Bulk
New std. hex head, packaged		
⅝" diam. and smaller x 6" and shorter	40	26
¾", ⅞", and 1" diam. x 6" and shorter	22	3
⅝" diam. and smaller x longer than 6"	8	+13
¾", ⅞", and 1" diam. x longer than 6"	+ 6	+32
¼" through ⅝" dia. x 6" and shorter	58	49
⅜" through 1" dia. x 6" and shorter	45	33

Minimum quantity—¼" through ⅜" diam., 15,000 pieces; 1/16" through ⅝" diam., 5,000 pieces; ¾" through 1" diam., 2,000 pieces.

Machine Screws & Stove Bolts

Plain Finish	Quantity	Discount Mach. Screws	Discount Stove Bolts
Cartons		60	60
Bulk			
To ¼" diam. incl.	25,000-and over	60	..
5/16 to ½" diam. incl.	15,000-200,000	60	..

Machine Screws & Stove Bolt Nuts

	Quantity	Discount Hex	Discount Square
In Cartons		16	19
In Bulk			
⅝" diam. & smaller	25,000 and over	14	16

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)

Copper	
Rolled elliptical, 18 in. or longer, 5000 lb lots	40.00
Electrodeposited	31.25
Brass, 80-20, ball anodes, 2000 lb or more	44.00
Zinc, ball anodes, 2000 lb lots	16.00
(for elliptical add 1¢ per lb)	
Nickel, 99 pct plus, rolled carbon, 5000 lb	1.0225
(Rolled depolarized add 3¢ per lb)	
Cadmium	1.55
Tin, ball anodes $1.13 per lb (approx.).	

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	68.70
Copper sulphate, 100 lb bags, per cwt.	22.15
Nickel salts, single, 100 lb bags	40.50
Nickel chloride, freight allowed, 300 lb	48.50
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums	24.05
(Philadelphia price 24.50)	
Zinc cyanide, 100 lb	60.75
Potassium cyanide, 100 lb drum N. Y.	48.00
Chromic acid, flake type, 10,000 lb or more	31.00

CAST IRON WATER PIPE INDEX

Birmingham	125.8
New York	138.7
Chicago	140.9
San Francisco-L. A.	148.6

Dec. 1955, value, Class B or heavier 5 in. or larger, bell and spigot pipe. Explanation: p. 57, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.

WAREHOUSES

Metropolitan Price, dollars per 100 lb.

Cities	City Delivery‡ Charge	Sheets: Hot-Rolled (18 ga. & hvr.)	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (10 gage)††	Strip: Hot-Rolled	Plates	Shapes: Standard Structure	Bars: Hot-Rolled (merchant)	Bars: Cold-Finished	Alloy Bars: Hot-Rolled 4615 As rolled	Alloy Bars: Hot-Rolled 4140 Annealed	Alloy Bars: Cold-Drawn 4615 As rolled	Alloy Bars: Cold-Drawn 4140 Annealed
Atlanta		8.59	9.87	10.13	8.64	8.97	9.05	9.01	10.68				
Baltimore	$.10	8.10	9.00	9.78	8.60	8.76	8.60	8.75	10.69*	16.28	15.28	19.83	19.98
Birmingham	.15	8.18	9.45	10.15	8.23	8.56	8.64	8.60	10.57				
Boston	.10	9.48	10.54	11.55	9.52	9.82	9.73	9.83	13.00	16.38	15.38	19.93	19.18
Buffalo	.15	8.40	9.15	11.22	8.65	9.05	9.05	8.95	11.15*	16.34	15.15	19.01	18.95
Chicago	.15	8.35	9.60	10.25	8.38	8.71	8.79	8.75	8.95	15.80	14.80	19.35	18.60
Cincinnati	.15	8.49	9.65	10.25	8.69	9.08	9.33	9.07	9.46	15.61	15.11	18.96	18.91
Cleveland	.15	8.33	9.60	10.35	8.48	8.94	9.16	8.84	10.95*	15.89	14.89	19.29	18.69
Denver	.20	9.70	11.30	12.49	9.80	9.70	9.80	9.98	10.65				17.60
Detroit	.15	8.58	9.85	10.60	8.73	9.06	9.33	9.05	9.30	15.46	15.06	18.81	18.86
Houston		7.10	8.05		7.25	8.05	7.25	7.20	11.10	16.20	15.25	19.65	18.95
Kansas City	.20	9.02	10.27	10.82	9.05	9.38	9.46	9.42	9.87	20.02	15.47	20.02	19.27
Los Angeles		9.70**	9.50	11.80	8.90	8.85	8.70	8.75	12.10*	17.05	16.10	21.05	20.35
Memphis	.15	8.55	9.80		8.80	8.93	9.01	8.97	12 11*				
Milwaukee	.15	8.48	9.73	10.38	8.51	8.84	9.00	8.88	9.18	15.93	14.93	19.48	18.73
New York	.10	8.97	10.23	10.66	9.41	9.53	9.45	9.67	12.86*	16.19	15.19	19.74	18.99
Norfolk	.20	8.20			8.90	8.65	9.20	8.90	10.70				
Philadelphia	.10	8.10	9.00	10.02	8.79	8.87	8.60	8.75	11.61*	16.11	15.11	19.66	18.91
Pittsburgh	.15	8.33	9.60	10.60	8.48	8.71	8.79	8.75	10.95*	15.89	14.89	19.35	18.69
Portland		10.00[1]	11.75[2]	13.30[3]	11.95[4]	10.10[5]	11.10[6]	9.85[7]	11.34*	18.50	17.45	20.75	20.25
San Francisco	.10	9.45	10.85	11.10	9.55	9.70	9.60	9.80	13.10	17.05	16.10	21.05	20.35
Seattle		9.95	11.15	12.20	10.00	9.70	9.80	10.10	14.05	17.15	16.35	20.65	20.15
Spokane	.15	10.10	11.30	12.15	10.15	9.85	9.95	10.25	14.20		17.35	21.55	21.05
St. Louis	.15	8.69	9.94	10.61	8.74	9.08	9.25	9.12	9.56	16.16	15.16	19.71	18.96
St. Paul	.15	8.94	10.19	10.86	8.99	9.45	9.53	9.37	9.81		15.41		19.21

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. **All sizes except 18 and 16 gage.

†† 10¢ zinc. ‡ Deduct for country delivery. * C1018—1 in. rounds. [1] 10 ga. x 36" x 120"; [2] 20 ga. x 36" x 120"; [3] 26 ga. x 30" x 96"; [4] ¼" x 1" in lots of 1000 to 9999; [5] sheared plate ¼" x 84" in lots of 1000 to 9999; [6] 3" x 5.70" in lots of 1000 to 9999; [7] M-1020—1-in. rounds in lots of 1000 to 9999.

(Effective May 19, 1958)

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	$1.795	T-1
18	4	1	—	5	2.50	T-4
18	4	2	—	—	1.96	T-2
1.5	4	1.5	8	—	1.155	M-1
6	4	3	6	—	1.545	M-3
6	4	2	5	—	1.30	M-2

High-carbon chromium.. .925 D-3, D-5
Oil hardened manganese .475 O-2
Special carbon ..... .36 W-1
Extra carbon ..... .36 W-1
Regular carbon ..... .305 W-1

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

CLAD STEEL

Base prices, cents per lb f.o.b.

	Cladding	Plate (*A3, J2, L4, C4*) 10 pct	15 pct	20 pct	Sheet (*I2*) 20 pct
Stainless Type	302				37.50
	304	37.95	42.25	46.70	40.00
	316	44.40	49.50	54.50	58.75
	321	40.05	44.60	49.30	47.25
	347	42.40	47.55	52.80	57.00
	405	29.85	33.35	36.85	.....
	410	29.55	33.10	36.70	.....
	430	29.80	33.55	37.25	.....

CR Strip (S9) Copper, 10 pct, 2 sides, 38.75; 1 side, 33.10.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Unreamed
Bessemer *U1*	5.525	6.50	6.975	.....	.....	.....	14.75
Cleveland *R3*	.....	.....	.....	.....	.....	.....	.....
So. Chicago *R3*	.....	.....	.....	9.75	.....	.....	.....
Ensley *T2*	5.525	6.50	.....	.....	.....	.....	.....
Fairfield *T2*	.....	6.50	.....	9.75	.....	6.60	.....
Gary *U1*	5.525	.....	.....	.....	.....	6.60	.....
Huntington *C16*	.....	6.50	.....	.....	.....	.....	.....
Ind. Harbor *I3*	5.525	.....	6.975	9.75	.....	6.60	.....
Ind. Harbor *Y1*	.....	.....	.....	9.75	.....	.....	.....
Johnstown *B3*	.....	6.50	.....	.....	.....	.....	.....
Joliet *U1*	.....	.....	6.975	.....	.....	.....	.....
Kansas City *S2*	.....	.....	.....	9.75	.....	.....	14.75
Lackawanna *B3*	5.525	6.50	6.975	.....	.....	6.60	.....
Lebanon *B3*	.....	.....	6.975	.....	14.50	.....	14.75
Minnequa *C6*	5.525	7.00	6.975	9.75	.....	6.60	14.75
Pittsburgh *P5*	.....	.....	.....	.....	.....	.....	14.75
Pittsburgh *J3*	.....	.....	.....	9.75	.....	.....	.....
Seattle *B2*	.....	.....	.....	10.25	.....	6.75	15.75
Steelton *B1*	5.525	.....	6.975	.....	.....	6.60	.....
Struthers *Y1*	.....	.....	.....	9.75	.....	.....	.....
Torrance *C7*	.....	.....	.....	.....	.....	6.75	.....
Williamsport *S5*	.....	6.50	.....	.....	.....	.....	.....
Youngstown *R3*	.....	.....	.....	9.75	.....	.....	.....

COKE

	Net-Ton
Furnace, beehive (f.o.b.) Connellsville, Pa.	$15.00 to $15.75
Foundry, beehive (f.o.b.)	$17.50 to $19.00
Foundry oven coke	
Buffalo, del'd	$31.75
Detroit, f.o.b.	30.50
New England, del'd	31.55
Kearney, N. J., f.o.b.	29.75
Philadelphia, f.o.b.	29.50
Swedeland, Pa., f.o.b.	29.50
Painesville, Ohio, f.o.b.	30.50
Erie, Pa., f.o.b.	30.50
Cleveland, del'd	32.65
Cincinnati, del'd	31.84
St. Paul, f.o.b.	29.75
St. Louis, f.o.b.	31.50
Birmingham, f.o.b.	28.85
Milwaukee, f.o.b.	30.50
Neville, Is., Pa.	29.25

LAKE SUPERIOR ORES

51.50% Fe natural content, delivered lower Lake ports. Prices for 1958 season. Freight changes for seller's account.

	Gross Ton
Openhearth lump	$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length) Semi-Processed	Fully Processed
Field	.....	9.625	
Armature	11.10	10.85	11.35
Elect.	11.80	11.55	12.05
Special Motor	.....	12.10	
Motor	12.90	12.65	13.15
Dynamo	13.95	13.70	14.20
Trans. 72	15.00	14.75	15.25
Trans. 65	15.55		
		Grain Oriented	
Trans. 58	16.05	Trans. 66	20.20
Trans. 52	17.10	Trans. 80	19.20
		Trans. 73	19.70

Producing points: Beech Bottom (*W5*); Brackenridge (*A3*); Granite City (*G2*); Indiana Harbor (*I3*); Mansfield (*E2*); Newport, Ky. (*A9*); Niles, O. (*N3*); Vandergrift (*U1*); Warren, O. (*R3*); Zanesville, Butler (*A7*).

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE Diam. (In.)	Length (In.)	Price	CARBON* Diam. (In.)	Length (In.)	Price
24	84	26.00	40	100,110	10.70
20	72	25.25	35	110	10.70
18	72	25.75	30	110	10.85
14	72	25.75	24	72 to 84	11.25
12	72	26.25	20	90	11.00
10	60	28.00	17	72	11.40
10	48	28.50	14	72	11.85
7	60	28.25	12	60	12.95
6	60	31.50	10	60	13.00
4	40	35.00	8	60	13.30
3	40	37.00			
2½	30	39.25			
2	24	60.75			

* Prices shown cover carbon nipples.

REFRACTORIES

Fire Clay Brick

Carloads per 1000

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5.00)	$135.00
No. 1 Ohio	120.00
Sec. Quality, Pa., Md., Ky., Mo., Ill.	120.00
No. 2 Ohio	103.00
Ground fire clay, net ton, bulk (except Salina, Pa., add $2.00)	21.50

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$150.00
Childs, Hays, Pa.	155.00
Chicago District	160.00
Western Utah	175.00
California	180.00
Super Duty Hays, Pa., Athens, Tex., Windham, Warren, O., Morrisville	157.00-160.00
Silica cement, net ton, bulk, Latrobe	28.50
Silica cement, net ton, bulk, Chicago	25.50
Silica cement, net ton, bulk, Ensley, Ala.	26.50
Silica cement, net ton, bulk, Mt. Union	24.50
Silica cement, net ton, bulk, Utah and Calif.	37.00

Chrome Brick *Per net ton*

Standard chemically bonded, Balt.	$105.00
Standard chemically bonded, Curtiner, Calif.	115.00
Burned, Balt.	99.00

Magnesite Brick

Standard Baltimore	$131.00
Chemically bonded, Baltimore	116.00

Grain Magnesite St. ⅜ to ⅛-in. grains

Domestic, f.o.b. Baltimore in bulk	$73.00
Domestic, f.o.b. Chewalah, Wash., Luning, Nev. in bulk	46.00
in sacks	52.00-54.00

Dead Burned Dolomite *Per net ton*

F.o.b. bulk, producing points in: Pa., W. Va., Ohio	$16.75
Midwest	17.00
Missouri Valley	15.00

(Effective May 19, 1958)

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard Q Coated Nails Col	Woven Wire Fence Col	"T" Fence Posts Col	Single Loop Bale Ties Col	Galv. Barbed and Twisted Barbless Wire Col	Merch. Wire Ann'ld ¢/lb.	Merch. Wire Galv. ¢/lb.
Alabama City *R3*	173	187	...	212	193	8.65	9.20
Aliquippa *J3****	173	190	...	...	190	8.65	9.325
Atlanta *A8***	175	192	...	214	198	8.75	9.425
Bartonville *K2***	175	192	178	214	198	8.75	9.425**
Buffalo *W6*	.....	.....	.....	.....	.....	8.65	8.95*
Chicago *N4****	173	190	172	212	196	8.65	9.325
Cleveland *A6*	.....	.....	.....	.....	.....	.....	.....
Cleveland *A5*	.....	.....	.....	.....	.....	8.65	.....
Crawf'dav. *M4***	175	192	...	214	198	8.75	9.425
Donora, Pa. *A5*	173	187	...	212	193	8.65	9.20
Duluth *A5*	173	187	...	212	193	8.65	9.20
Fairfield, Ala. *T2*	173	187	...	212	193	8.65	9.20
Galveston *D4*	9.10‡	.....	.....	.....	.....	.....	.....
Houston *S2*	178	192	...	217	198	8.90	9.45
Jacksonville *M4*	184-1	197	...	219	203	9.00	9.675
Johnstown *B3***	173	190	172	...	196**	8.65	9.325**
Joliet, Ill. *A5*	173	187	...	212	193	8.65	9.20
Kokomo *C9**	175	189	...	214	195*	8.75	9.30*
L. Angeles *B2****	.....	.....	.....	.....	.....	9.60	10.275
Kansas City *S2**	178	192	...	217	198*	8.90	9.45*
Minnequa *C6*†	178	192	177	217	198†	8.90	9.45†
Monessen *P6*	.....	.....	.....	.....	193	8.65	9.20
Palmer, Mass. *W6*	.....	.....	.....	.....	.....	8.95	9.50*
Pittsburg, Cal. *C7*	192	210	...	...	213	9.60	10.15
Rankin, Pa. *A5*	173	187	...	...	193	8.65	9.20
So. Chicago *R3*	173	187	...	...	193	8.65	9.20
S. San Fran. *C6*†	.....	.....	.....	236	.....	9.60	10.15†
SparrowsPt. *B3****	175	.....	.....	214	198	8.75	9.425
Sterling, Ill. *N4****	175	192	172	214	198	8.75	9.425
Struthers, O. *Y1**	.....	.....	.....	.....	.....	8.65	9.30
Worcester *A5*	179	.....	.....	.....	.....	8.95	9.50
Williamsport *S5*	.....	.....	.....	.....	.....	.....	.....

* Zinc less than .10¢.
** 11-12¢ zinc.
*** .10¢ zinc.
† Plus zinc extras.
‡ Wholesalers only.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT 0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Baltimore, Md. *T8*	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. *W12*	.....	10.70	12.90	16.10	19.30
Boston *T8*	9.50	10.70	12.90	15.90	18.85
Buffalo, N. Y. *R7*	8.95	10.40	12.60	15.60	18.55
Carnegie, Pa. *S9*	8.95	10.40	12.60	15.60	18.55
Cleveland *A5*	8.95	10.40	12.60	15.60	18.55
Dearborn *S1*	9.05	10.50	12.70	.....	.....
Detroit *D1*	9.05	10.50	12.70	15.70	.....
Detroit *D2*	9.05	10.50	12.70	.....	.....
Dover, O. *C4*	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. *M8*	9.05	10.40	12.60	.....	.....
Franklin Park, Ill. *T8*	9.05	10.40	12.60	15.60	18.55
Harrison, N. J. *C11*	.....	.....	12.90	16.10	19.30
Indianapolis *J3*	9.10	10.35	12.60	15.60	18.55
Los Angeles *C1*	11.15	12.60	14.80	17.80	.....
New Castle, Pa. *B4*	8.95	10.40	12.60	15.60	.....
New Haven, Conn. *D1*	9.40	10.70	12.90	15.90	.....
Pawtucket, R. I. *N7*	9.50	10.70	12.90	15.90	18.85
Pittsburgh *S7*	8.95	10.40	12.60	15.60	18.55
Riverdale, Ill. *A1*	9.05	10.40	12.60	15.60	18.55
Sharon, Pa. *S1*	8.95	10.40	12.60	15.60	18.55
Trenton, *R4*	.....	10.70	12.90	16.10	19.30
Wallingford *W1*	9.40	10.70	12.90	15.90	18.55
Warren, Ohio *T4*	8.95	10.40	12.60	15.60	18.75
Worcester, Mass. *A5*	9.50	10.70	12.90	15.90	18.85
Youngstown *J3*	8.95	10.40	12.60	15.60	18.55

BOILER TUBES

$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	Size B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
Babcock & Wilcox	2	13	36.34	42.56	35.22
	2½	12	48.94	57.31	47.43
	3	12	56.51	66.18	54.77
	3½	11	65.97	77.25	63.93
	4	10	87.61	102.59	85.53
National Tube	2	13	36.34	42.56	35.22
	2½	12	48.94	57.31	47.43
	3	12	56.51	66.18	54.77
	3½	11	65.97	77.25	63.93
	4	10	87.61	102.59	85.53
Pittsburgh Steel	2	13	36.34	42.56	.....
	2½	12	48.94	57.31	.....
	3	12	56.51	66.18	.....
	3½	11	65.97	77.25	.....
	4	10	87.61	102.59	.....

Announcing NEW SOURCE for stainless steel wire

J & L Stainless Steel Division's New Wire Mill Offers Wide Range of Wire Sizes

The increasing use of stainless steel wire in new product development, old product improvement and for experimental purposes has placed a new responsibility on the manufacturer of quality stainless steel.

To meet this growing need, J & L Stainless Steel Division is pleased to announce the opening of its new wire mill . . . to make available stainless wire in a wide range of sizes, finishes and coatings.

For data regarding wire, its properties and uses, consult our Stainless Steel Wire Manual. For special applications write in detail giving complete information about your requirements.

Write now for your copy of J & L's new Stainless Steel Wire Manual.

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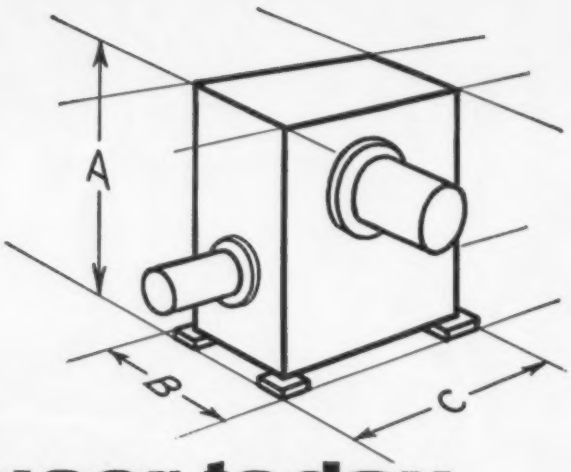
Do-It-Yourself...



Let's design a speed reducer today

So you can't find a speed reducer to fit your latest brainchild without ruining the design? Doggone manufacturers all build reducers too big to fit into those few cubic feet you've got left for the reduction unit back behind the double-ended dingbat?

Revolt! Design your own! Show 'em!

By George, design it yourself and it'll fit. How? Well, you know your size limits. Draw the biggest box that'll fit the space and you've got your reducer housing specifications.

Now you need gears that will (1) transmit the needed horsepower under all operating conditions, (2) provide the ratio your machine requires and (3) fit the space that's available. You'll soon discover that there are limits to what gears can do in transmitting horsepower. The cheapest answer is parallel shaft helical gears. If they'll fit you're in clover. But they take the most room, especially when you're out of the fractional hp range. The right angle worm and gear combination is the most compact drive arrangement.

Here again you have a choice. Cylindrical worm gearing is often used, and if it'll do the job, is worth consideration. But it's not the most compact possibility. The best way to shrink gears and still carry the load is the double-enveloping worm gear design. Both worm and gear are throated and the two literally wrap around each other. This brings center distance of the two shafts closer together and you can put them inside smaller housings.

Does this reduce load capacity? No sir! You can carry the same load with center distances up to 33% smaller than those of cylindrical worm gears. Or use the same center distance and carry a greater load. Will these gears hold up in operation? Sure, if you beef up the teeth, the bearings and the housing. Use straight-sided worm and gear teeth and you'll get all the strength there you'll ever need. Use large taper roller bearings with real B-10 life. Use a reinforced, heavy wall housing that won't distort under load. Put fins on it for added cooling and increased thermal horsepower capacity to meet your needs. Now, put the whole thing together and you've got a speed reducer that's a dilly.

Designing your own speed reducer give you a headache? Looking for an easier way? There is one. Someone's already done exactly what you're talking about. You can order that compact speed reducer right off the shelf. Where?

Cone-Drive Gears, that's where!

Yes sir. They stock double-enveloping worm gear speed reducers from fractional to 665 hp. Standard ratios from 5:1 to 70:1 in about 15 increments, all interchangeable in any type housing of a given center distance. Worms over and worms under. Gear shafts vertical, too. Single- or double-extended output shafts, or shaft mounted. Over 200,000 combinations possible. Wow! Just about anything you want.

Better get Cone-Drive's new speed reducer catalog that details everything. Ask for Bulletin CD-218. Cone-Drive Gears, Div. Michigan Tool Co., 7171 E. McNichols Rd., Detroit 12, Mich.

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. *B6*	68.00	68.50	69.00	69.50	.....
Birmingham *R3*	62.00	62.50*	.....	.....	.....
Birmingham *W9*	62.00	62.50*	66.50	.....	.....
Birmingham *U4*	62.00	62.50*	66.50	.....	.....
Buffalo *R3*	66.00	66.50	67.00	67.50	.....
Buffalo *H1*	66.00	66.50	67.00	67.50	.....
Buffalo *W6*	66.00	66.50	67.00	67.50	.....
Chester *P2*	66.50	67.00	67.50	.....	.....
Chicago *I4*	66.00	66.50	66.50	67.00	.....
Cleveland *A5*	66.00	66.50	66.50	67.00	71.00†
Cleveland *R3*	66.00	66.50	66.50	67.00	.....
Duluth *I4*	66.00	66.50	66.50	67.00	71.00†
Erie *I4*	66.00	66.50	66.50	67.00	71.00†
Everett *M6*	67.50	68.00	68.50	.....	.....
Fontana *K1*	75.00	75.50	.....	.....	.....
Geneva, Utah *C7*	66.00	66.50	.....	.....	.....
Granite City *G2*	67.90	68.40	68.90	.....	.....
Hubbard *Y1*	.....	.....	66.50	.....	.....
Ironton, Utah *C7*	66.00	66.50	.....	.....	.....
Midland *C11*	66.00	.....	.....	.....	.....
Minnequa *C6*	68.00	68.50	69.00	.....	.....
Monessen *P6*	66.00	.....	.....	.....	.....
Neville Is. *P4*	66.00	66.50	66.50	67.00	71.00†
N. Tonawanda *T1*	.....	66.50	67.00	67.50	.....
Sharpsville *S3*	66.00	.....	66.50	67.00	.....
So. Chicago *R3*	66.00	66.50	66.50	67.00	.....
So. Chicago *W8*	66.00	.....	66.50	67.00	.....
Swedeland *A2*	68.00	68.50	69.00	69.50	.....
Toledo *I4*	66.00	66.50	66.50	67.00	.....
Troy, N. Y. *R3*	68.03	68.50	69.00	69.50	74.00
Youngstown *Y1*	.....	.....	66.50	67.00	.....

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, $2 per ton for 0.50 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel.

Add $1.00 for 0.31-0.69 pct phos.

Silvery Iron: Buffalo (6 pct), *H1*, $79.25; Jackson *J1*, *I4* (Globe Div.), $78.00; Niagara Falls (15.01-15.50), $101.00; Keokuk (14.01-14.50), $103.50; (15.51-16.00), $106.50. Add $1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add $1.25 for each 0.50 pct manganese over 1.00 pct. Bessemer silvery pig iron (under .10 pct phos.): $64.00 Add $1.00 premium for all grades silvery to 18 pct.

† Intermediate low phos.

STAINLESS STEEL

Base price cents per lb f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, reroll.	22.00	23.75	23.25	25.25	—	27.00	39.75	32.25	37.00	—	16.75	—	17.00
Slabs, billets	27.00	27.00	28.00	31.50	32.00	33.25	49.50	40.00	46.50	—	21.50	—	21.75
Billets, forging	—	36.50	37.25	38.00	41.00	40.50	62.25	47.00	55.75	32.00	28.25	28.75	28.75
Bars, struct.	42.00	43.00	44.25	45.00	48.00	47.75	73.00	55.50	64.75	37.75	33.75	34.25	34.25
Plates	44.25	45.00	46.25	47.25	50.00	50.75	76.75	59.75	69.75	40.25	35.00	36.75	36.00
Sheets	48.50	49.25	51.25	52.00	—	55.00	80.75	65.50	79.25	48.25	48.25	—	48.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	—	55.00	80.75	65.50	79.25	48.25	40.25	—	48.75
Wire CF; Rod HR	40.00	40.75	42.00	42.75	45.50	45.25	69.25	52.50 52.75	61.50	35.75	32.00	32.50	32.50

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., *C11*; Brackenridge, Pa., *A3*; Butler, Pa., *A7*; Vandergrift, Pa., *U1*; Washington, Pa., *W2*, *J2*. Baltimore, *E1*; Middletown, O., *A7*; Massillon, O., *R3*; Gary, *U1*; Bridgeville, Pa., *U2*; New Castle, Ind., *I2*; Detroit, *M2*.

Strip: Midland, Pa., *C11*; Waukegan, Cleveland, *A5*; Carnegie, Pa., *S9*, McKeesport, Pa., *F1*; Reading, Pa., *C2*; Washington, Pa., *W2*; W. Leechburg, Pa., *A3*, Bridgeville, Pa., *U2*, Detroit, *M2*; Canton, Massillon, O., *R3*; Harrison, N. J., *D3*; Youngstown, *J3*; Sharon, Pa., *S1*; Butler, Pa., *A7*; Wallingford, Conn., *U3* (plus further conversion extras); *W1* (.25¢ per lb higher); New Bedford, Mass., *R6*; Gary, *U1* (.25¢ per lb higher).

Bar: Baltimore, *A7*; S. Duquesne, Pa., *U1*, Munhall, Pa., *U1*; Reading, Pa., *C2*; Titusville, Pa., *U2*; Washington, Pa., *J2*; McKeesport, Pa., *U1*, *F1* Bridgeville, Pa., *U2*; Dunkirk, N. Y., *A3*; Massillon, O., *R5*, S. Chicago, *U1*; Syracuse, N. Y., *C11*; Watervliet, N. Y., *A3*; Waukegan, *A5*; Canton, O., *T5*, *R3*; Ft. Wayne, *I4*; Detroit, *R5*; Gary, *U1*; Owenboro, Ky., *G5*; Bridgeport, Conn., *N8*.

Wire: Waukegan, *A5*; Massillon, O., *R3*; McKeesport, Pa., *F1*; Ft. Wayne, *J4*; Harrison, N. J., *D3*; Baltimore, *A7*; Dunkirk, *A3*; Monessen, *P1*; Syracuse, *C11*; Bridgeville, *U2*.

Structurals: Baltimore, *A7*; Massillon, O., *R3*; Chicago, Ill., *J4*; Watervliet, N. Y., *A3*; Syracuse, *C11*; S. Chicago, *U1*.

Plates: Brackenridge, Pa., *A3*; Chicago, *U1*; Munhall, Pa., *U1*; Midland, Pa., *C11*; New Castle, Ind., *I2*; Middletown; *A7*; Washington, Pa., *J2*; Cleveland, Massillon, *R3*; Coatesville, Pa., *C15*; Vandergrift, Pa., *U1*; Gary, *U1*.

Forging billets: Midland, Pa., *C11*; Baltimore, *A7*; Washington, Pa., *J2*; McKeesport, *F1*; Massillon, Canton, O., *R5*; Watervliet, *A3*; Pittsburgh, Chicago, *U1*· Syracuse, *C11*; Detroit, *R5*; Munhall, Pa., S. Chicago, *U1*; Owensboro, Ky., *G5*; Bridgeport, Conn., *N8*.

(Effective May 19, 1958)

FERROALLOY PRICES

Ferrochrome

Cents per lb contained Cr, lump, bulk, carloads, del'd. 67-71% Cr, .30-1.00% max. Si.

0.02% C....	41.00	0.50% C....	38.00
0.05% C....	39.00	1.00% C....	37.75
0.10% C....	38.50	1.50% C....	37.50
0.20% C....	38.25	2.00% C....	37.25

4.00-4.50% C, 60-70% Cr, 1-2% Si.. 28.75
3.50-5.00% C, 57-64% Cr, 2.00-4.50% Si 27.50
0.025% C (Simplex) 36.75
0.10% C, 52-57% Cr, 2.00% max Si. 37.50
7-8½% max C, 50-55% Cr, 3-6% max Si 22.50
7-8½% max C, 50-55% Cr, 3% max Si 25.00

High Nitrogen Ferrochrome

Low-carbon type 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome max. 0.10% C price schedule. Add 5¢ for each additional 0.25% of N.

Chromium Metal

Per lb chromium, contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.

0.10% max. C $1.31
0.50% max. C 1.31
9 to 11% C, 88-91% Cr, 0.75% Fe... 1.40

Electrolytic Chromium Metal

Per lb of metal 2" x D plate (⅛" thick) delivered packed, 99.80% min. Cr. (Metallic Base) Fe 0.20 max.

Carloads $1.29
Ton lots 1.31
Less ton lots 1.33

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-45%, C 0.05% max.) Carloads, delivered, lump, 3-in. x down, packed.

Price is sum of contained Cr and contained Si.

	Cr	Si
Carloads, bulk	27.50	14.20
Ton lots	32.75	15.65
Less ton lots	34.35	17.30

Calcium-Silicon

Per lb of alloy, lump, delivered, packed. 30-33% Cr, 60-65% Si, 3.00 max. Fe.

Carloads 25.65
Ton lots 27.95
Less ton lots 29.45

Calcium-Manganese—Silicon

Cents per lb of alloy, lump, delivered, packed.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads 24.25
Ton lots 26.15
Less ton lots 27.15

SMZ

Cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh.

Ton lots 21.15
Less ton lots 22.40

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn, packed.

Carload lots 18.45
Ton lots 19.95
Less ton lots 21.20

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed 19.20
Ton lots to carload packed 21.15
Less ton lots 22.40

Ferromanganese

Maximum base price, f.o.b., lump size, base content 74 to 76 pct Mn.

	Cents per-lb
Producing Point Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	12.25
Johnstown, Pa.	12.25
Neville Island, Pa.	12.25
Sheridan, Pa.	12.25
Philo, Ohio	12.25
S. Duquesne	12.25

Add or substract 0.1¢ for each 1 pct Mn above or below base content.

Briquets, delivered, 66 pct Mn:

Carloads, bulk 14.80
Ton lots packed in bags 17.20

Spiegeleisen

Per gross ton, lump, f.o.b. Palmerton, Pa., and Neville Island, Pa.

Manganese	Silicon	
16 to 19%	3% max.	$100.50
19 to 21%	3% max.	102.50
21 to 23%	3% max.	105.00

Manganese Metal

2 in. x down, cents per pound of metal delivered.

95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.

Carload, packed 45.75
Ton lots 47.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.

Carloads 34.00
Ton lots 36.00
250 to 1999 lb 38.00
Premium for Hydrogen-removed metal 0.75

Medium Carbon Ferromanganese

Mn 80 to 85%, C 1.25 to 1.50, Si 1.50% max., carloads, lump, bulk, delivered, per lb of contained Mn 25.50

Low-Carb Ferromanganese

Cents per pound Mn contained, lump size, del'd Mn 85-90%.

	Carloads	Ton (Bulk)	Less
0.07% max. C, 0.06% P, 90% Mn	37.15	39.95	41.15
0.07% max. C	35.10	37.90	39.10
0.10% max. C	34.35	37.15	38.35
0.15% max. C	33.60	36.40	37.60
0.30% max. C	32.10	34.90	36.10
0.50% max. C	31.60	34.40	35.60
0.75% max. C, 80.85% Mn, 5.0-7.0% Si ...	28.60	31.40	32.60

Silicomanganese

Lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping point.

Carloads bulk 12.80
Ton lots, packed 14.45
Briquet contract basis carloads, bulk, delivered, per lb of briquet 15.10
Packed, pallets, 3000 lb up to carloads 16.50

Silvery Iron (electric furnace)

Si 15.50 to 16.00 pct., f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $106.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $93.00.

Silicon Metal

Cents per pound contained Si, lump size, delivered, packed.

	Ton lots, packed	Carloads, packed
96.75% Si, 1.25% Fe..	24.20	22.90
98% Si, 0.75% Fe	24.95	23.65

Silicon Briquets

Cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si, briquets.

Carloads, bulk 7.70
Ton lots, packed 10.50

Electric Ferrosilicon

Cents per lb contained Si, lump, bulk, carloads, f.o.b. shipping point.

50% Si....	14.20	75% Si....	16.40
65% Si....	15.25	85% Si....	18.10
	90% Si....	19.50	

Ferrovanadium

50-55% V delivered, per pound, contained V, in any quantity.

Openhearth 3.20
Crucible 3.30
High speed steel (Primos) 3.40

Calcium Metal

Eastern zone, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
100 to 1999 lb..	2.40	3.30	4.55

(Effective May 19, 1958)

Alsifer, 20% Al, 40% Si, 40% Fe, f.o.b. Suspension Bridge, N. Y., per lb.

Carloads, bulk ..... 10.35¢
Ton lots ..... 11.70¢

Calcium molybdate, 43.6-46.6% f.o.b. Langeloth, Pa., per pound contained Mo $1.28

Ferrocolumbium, 50-50%, 2 in. x D, delivered per pound contained Cb.

Ton lots $4.00
Less ton lots..... 4.05

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, del'd ton lots, 2-in. x D per lb con't Sb plus Ta $3.80

Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloth, Pa., per pound contained Mo.. $1.68

Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $4.00 unitage, per gross ton $90.00
10 tons to less carload $110.00

Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti $1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti $1.50
Less ton lots $1.54

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton $240.00

Ferrotungsten, ¼ x down packed, per pounds contained W, ton lots delivered ..... $2.15 (nominal)

Molybdic oxide, briquets per lb contained Mo, f.o.b. Langeloth, Pa. $1.41
bags, f.o.b. Washington, Pa., Langeloth, Pa. $1.38

Simanal, 20% Si, 20% Mn, 20% Al, f.o.b. Philo, Ohio, freight allowed per lb.

Carload, bulk lump ..... 18.50¢
Ton lots, packed lump ..... 20.50¢
Less ton lots ..... 21.00¢

Vanadium oxide, 86-89% V_2O_5 per pound contained V_2O_5 .... $1.38

Zirconium, per lb of alloy

35-40% f.o.b. freight allowed, carloads, packed ..... 27.25¢
12-15%, del'd lump, bulk-carloads ..... 9.25¢

Boron Agents

Borosil, per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B

2000 lb carload $5.50

Bortram, f.o.b. Niagara Falls.

Ton lots per pound ..... 45¢
Less ton lots, per pound ..... 50¢

Corbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4-5-7.5%, f.o.b., Suspension Bridge, N. Y., freight allowed.

Ton lots per pound ..... 14.00¢

Ferroboron, 17.50 min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, ton lots. F.o.b. Wash., Pa., Niagara Falls, N. Y., delivered 100 lb up $1.20

10 to 14% B ..... .85
14 to 19% 1.20
19% min. B 1.50

Grainal, f.o.b. Cambridge, O., freight, allowed, 100 lb and over

No. 1 ..... $1.05
No. 79 ..... 50¢

Manganese-Boron, 75.00% Mn, 15.20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.

Ton lots (packed) $1.46
Less ton lots (packed) 1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd less ton lots 2.15

Encased with KENNAMETAL for greater stiffness

NEW K-Bar stopped chatter

Machined areas shown above prove the superior performance of the new Kennametal K-Bar over a conventional steel boring bar. Both bars operated under identical conditions . . . both were fitted with the same grade Kendex inserts and "hardware." The Kennametal sleeve encasing the K-Bar made the difference. This sleeve provided the rigidity to snuff out vibration and stop chatter because Kennametal is up to three times as rigid as the hardest steel.

The K-Bar is almost as rigid as a bar of solid Kennametal because its design concentrates the Kennametal where stress is greatest. Thus, maximum benefits are obtained to make its application to larger boring bars feasible.

Other advantages of the new K-Bar: Prevents taper, weaving, and drag-out scoring; reduces chipping and chatter-damage to cutting tips and permits use of harder grades of Kennametal for cutting high-tensile steels. On many jobs, as much metal can be removed on one pass with the K-Bar as on two or more passes with steel bars. Standard "throw-away" Kendex inserts (square, triangular or round), chipbreakers and shims are used on all K-Bars.

The K-Bar design can be applied to a wide variety of single—and multiple—point bars. Ask your Kennametal Representative for more details, or write KENNAMETAL INC., Latrobe, Pa., for descriptive bulletin and prices.

KENDEX K-Bar cross section, showing steel core encased by Kennametal sleeve

KENNAMETAL K-BARS are available in eight sizes, from 1¼" to 2½"

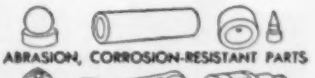
Style A—
For boring to a square shoulder

Style B—
With 15° lead angle, for straight-through boring

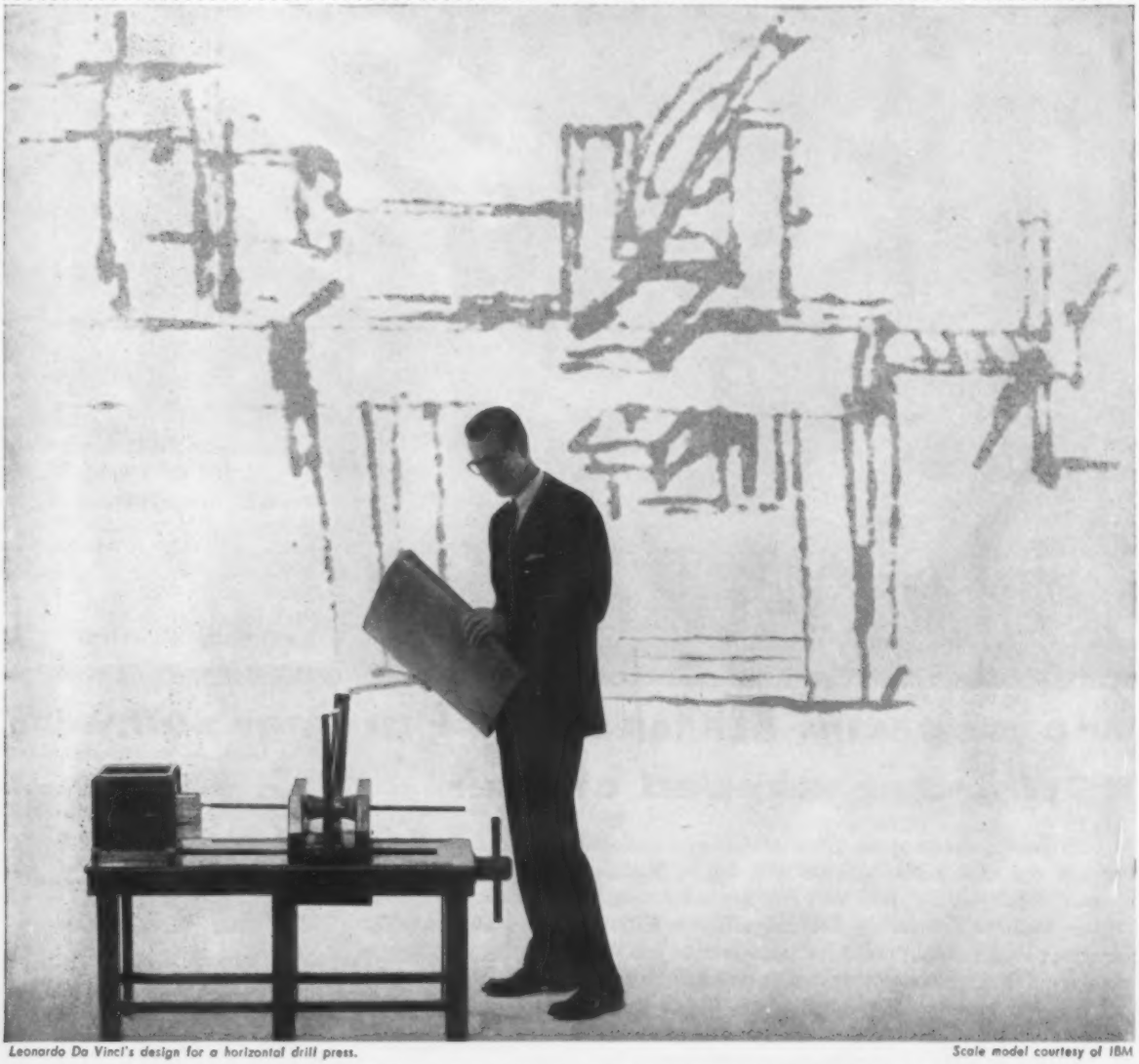
*Trademark

3197

INDUSTRY AND KENNAMETAL
...Partners in Progress



creative designing calls for an open mind



Leonardo Da Vinci's design for a horizontal drill press. *Scale model courtesy of IBM*

EVEN DA VINCI'S HORIZONTAL DRILL PRESS COULD HAVE BEEN BETTER WITH HELP FROM AN SKF ENGINEER.

Designs improve with help from an SKF engineer because his line covers all four types of ball and roller bearings in many thousands of sizes. In no way are his recommendations confined by his product line. Quite the contrary. He has the kind of flexibility he requires to keep an entirely open mind on any bearing problem. Give your problem to SKF and see.

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Spherical, Cylindrical, Ball, and "Tyson" Tapered Roller Bearings

EVERY TYPE—EVERY USE

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SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.

*REG. U. S. PAT. OFF.

New York Sales In Spring Upturn

Used machinery dealers in the area believe recent improvement will continue.

Business is good for cranes, shears, and presses.

▪ Spring breezes are freshening used machinery sales in the New York area. Dealers report that both orders and inquiries are up, believe the surge will continue.

Opinion is that this upswing stems from an overall pickup in area metalworking. "Inquiries are turning into orders," reports one dealer. "The buyers must have business on their books."

Cranes Show Trend—Cranes are a good illustration. Business in lighter units—5, 10 and 15 ton models—is very good. These capacities are the ones popular in fabricating shops. Since delivery and installation time requires at least two months, customers must look for good business in their own shops for late summer and fall.

The missile program is spurring buying of sheet metal equipment, especially bending rolls, shears, and presses. Press demand centers around the heavier models, with little interest in light-weights. Spring stepup in construction has brought a corresponding increase in related machinery. Actually, ironworkers and similar equipment have never been as depressed in this area as other machines, but the boost is encouraging.

Financing Still Tough — Money remains a fly in the ointment. It is supposed to be easier. But there is a marked shortage of cash. Dealers are taking paper on many sales, an unusual procedure.

Surplus Disposal Curb Urged by Dealers

Used machinery dealers are concerned about the "tidal wave" of government surplus tools coming into the market.

Resolutions passed at the annual meeting of the Machinery Dealers National Assn. in Miami Beach urge moderation in surplus disposal.

They call for Congress to provide schools, hospitals, and institutions with surplus equipment without cost. They ask that good used tools, rather than new ones, be given foreign nations receiving U. S. aid. They support the National Industrial Equipment Reserve, setting aside tools for use by defense supported industries.

The MDNA also asked that government surplus machines be liquidated through the normal channels of trade so as not to affect private economy. Dealers pointed out they are ready to aid in classifying government equipment for sale or preservation as surplus. They agreed to help set up a government code classification for emergency use on all the tools they have in stock. And they vowed to continue fighting for extension of the depreciation allowances granted on new tools to the used machinery field.

CONSIDER GOOD USED EQUIPMENT FIRST

ANGLE BENDING ROLL
3 x 3 x ⅜ Buffalo No. 1 Angle Bending Roll
BALER
Model #122-PX-60 Logemann, Baling Chamber 60 x 16 x 18"
BENDER & STRAIGHTENER
Pels Type JH All Steel Bender & Straightener for Beams, Channels, Angles, Tees—Angles Equal & Tees 8 x 8 x 1⅛"
BENDING ROLLS
8' x ¼" Bertsch Initial Type
12' x 5/16" Bertsch Initial Type
18' x 1" Niles Pyramid Type
20' x ¾" Niles Pyramid Type
BRAKES—PRESS TYPE
12' x 5/16" Cincinnati
10' x ¼" & 12' x ¼" Hydraulic—NEW
CRANES—OVERHEAD ELECTRIC TRAVELING

3 ton P&H	56' Span	220/3/60
5 ton Shepard Niles	70' Span	230 Volt D.C.
7½ ton Shaw	40' Span	230 Volt D.C.
8 ton P&H	55' Span	220/3/60
10 ton P&H	39' Span	230 Volt D.C.
10 ton Shaw	48' Span	230 Volt D.C.
10 ton P&H	52' Span	230 Volt D.C.
10 ton Shaw	120' Span	230 Volt D.C.
15 ton Northern	54' Span	230 Volt D.C.
15 ton Shepard Niles	56' Span	230 Volt D.C.
20 ton Shepard Niles	98' Span	250 Volt D.C.
20 ton P&H	100' Span	250 Volt D.C.
120 ton Shepard Niles	77' Span	220/3/60

DRAW BENCH
10,000# Aetna Standard Single Draw 44 Ft. Length of Draw
FLANGING MACHINE
⅝" McCabe Pneumatic Flanging Machine
FORGING MACHINES
1" to 5" Acme, Ajax, National
FURNACE—MELTING
15 ton Heroult Top Charge, 12' Shell
HAMMERS—BOARD DROP—STEAM DROP—STEAM FORGING
800 lb. to 12,000 lb. incl.
LEVELERS—ROLLER
37" Torrington, 19 Rolls 1 31/32" dia.
44" Newbold, 9 Rolls 4" dia.
60" Aetna Standard, 17 Rolls 4⅜" dia.
PLATE DUPLICATOR
No. 12 Thomas Single End, Punch Capacity 150 tons Table Area for handling 5' x 16' Plates
PRESSES—HYDRAULIC
600 ton HPM Fastraverse, Bed 36" x 36"
600 ton Elmes, 36" Stroke, 48x45" Bet. Cols.
1000 ton HPM Fastraverse, Bed 48" x 74", 36" Stroke
1500 ton Mesta Steam Hydr. Forging Press
PRESSES—STRAIGHT SIDE
180 ton Hamilton #847, 12" Str. 35½" Bet. Ups.
200 ton Clearing F1200-42, Stroke 30", Bed 44"x38"
250 ton Bliss 81 7½ Str. Blstr. 33"x39"
PUNCH & SHEAR COMBINATIONS
Buffalo #1½ Ironworker
Webb No. 4 Ironworker
Cleveland Style C: Arch Jaw, Capy. ⅝" x ⅝"
Cleveland Style EF, Arch Jaw, Capy. 1¼" x 1"
TORRINGTON FLAT WIRE MILL LINE
Two Stand Two High 6" x 5", Comp. with Acc.
ROLLING MILLS
6" x 1" Three Stand Wire. Rolling Mill Complete with Pay Off & Recoiler
8" x 10" Single Stand Two High
10" x 14" Single Stand Two High
10" x 16" Single Stand Two High
12" x 12" Single Stand Two High
12" x 16" Single Stand Two High
16" x 24" Single Stand Two High
20" x 36" Single Stand Two High
ROLL—FORMING
18 Stand Custom Built, 2½" Shaft, will take 36" wide
ROLLS—PLATE STRAIGHTENING
108" Bertsch, Seven Rolls 9" Dia.
72" Niles 7 Rolls 9" Dia. Motor Driven
SHEAR—ALLIGATOR
No. 4 Mesta RH LK, Capacity 2" x 12"
SHEAR—ANGLE
6 x 6 x ⅝" Hilles & Jones
SHEAR LINE
36" x .020 Ga. Halliden Shear Line
SHEAR—ROTARY
#750 Kling, 48" Throat, ⅝" Capacity—LATE
SHEARS—SQUARING
6' x 14 Ga. Edwards, Motor Drive LATE
14 x 5/16" Cincinnati #1814
SLITTERS
36" Wean Slitting Line
48" Wean Slitting Line
STRAIGHTENERS
⅛" Lewis 4C with 22 Ft. Cut off
⅝" Shuster with 12' Cut Off, M.D.
Torrington 13-Roll Capy. 1¾" Sq. Etc.
No. 0 Medart 2 Roll, Capacity ¼"-1½" Bars
No. 3 Medart 3 Roll, Capacity to 4½" Tubing
SWAGING MACHINES
#6½A Fenn Capacity 3⅝" Tube, 1¼" Solid
10" Die Length Hydraulic Feed, LATE
TUBE REDUCER
2½" Tube Reducing Co. Tube Reducer
WIRE DRAWING MACHINES
12 Block Scudder, Blocks 8" Dia.
Type B Morgan 4-Block, Capy. #5 Rod down
No. 2 Vaughn 12-Die Continuous, Capy. #14 to #27

"MY BOY FRIEND SAYS **ALL MACHINE TOOLS ARE THE SAME"**

This old gal (and her friend) just don't know much about used machine tools. For the truth is that used machine tools differ greatly in their value — in their ability to produce. Miles tools actually perform like new because they have been completely renewed — here at the Miles shops. Worn bearings are replaced, sliding surfaces re-surfaced and realigned, worn gears replaced and, in fact, the entire machine is rebuilt like new and tested under full loads and speeds according to the original manufacturer's specification. That is why a Miles guarantee means satisfaction.

UPSETTERS
An exceptional listing of late type upsetters from stock.
1" National, air clutch, 1947
1½" National guided ram, susp. sl.
3" Ajax susp. sl., air clutch, 1936
3" National air clutch, 1936
4" National air clutch, 1944
4" National susp. sl., guided ram.
7½" National air clutch, 1944

PRESSES
90 ton No. 75 Bliss horning
106 ton No. 56 Toledo s.s.c. trim side shear
370 ton No. 1BS Cleveland s.s.c.
600 ton No. 644 Toledo knuckle coining
750 ton No. 3 National Maxi. (2), 1945

ROLLS
1L Kane & Roach vert.
No. 1B Kane & Roach straightening roll, 2½" Cap.

BULLDOZERS
180 ton No. 27 Williams & White
BOLT SHAVER. Type KK Economy, hopper
HAMMER. 250 lb. Nazel pneumatic
PUNCH & SHEAR. 38" throat New Doty
MILLER 42" x 42" x 18' Ingersoll, adj. rail
LATHE. 96" Betts-Bridgeford headstock, 1941
SAW. 10½" x 10½" No. 3 Motch & Merryweather.
COIL CRADLE. Cleveland uncoilers, 72" wide

Write for complete new stock list No. 209
Contract Rebuilding Of Your Used Machinery

OVER 1,000 NEW AND USED MACHINE TOOLS IN STOCK
WRITE FOR LATEST STOCK LIST
MILES MACHINERY COMPANY
2041 EAST GENESEE • SAGINAW, MICH. PL. 2-3105

eastern Rebuilt Machine Tools

THE SIGN OF QUALITY—THE MARK OF DEPENDABILITY

MANUFACTURING TYPE MILLING MACHINES

No. 08 Cincinnati, rise and fall, 1944
No. 000 Brown & Sharpe Plain Production, m.d.
No. MM-1-6 U.S. Multi-Miller, m.d.
No. 21 Brown & Sharpe Automatic, m.d.
No. 33 Simplex Production, m.d.
No. 33H Sundstrand Trimplex Rigidmill, m.d.
No. 3A Sundstrand Plain Automatic Rigidmill, m.d.
24" Cincinnati Duplex Automatic, m.d.
48"x16' Newton Slab Miller, m.d.
54"x30"x16' Ingersoll Slab Miller, m.d.
Model 1402 Kearney & Trecker Simplex, m.d.
Model 1404 Kearney & Trecker Simplex, m.d., Production
No. 12 Brown & Sharpe Plain Horizontal, m.d.
3—24" Cincinnati Plan Hydromatic, m.d. in base
3—36" Cincinnati Duplex Hydromatic, m.d. in base
No. 4-36 Cincinnati Plain Hydromatic, m.d.
Model 33-1536 Sundstrand Simplex Fluid Screw Type Rigidmill, m.d.
No. 34-36 Cincinnati Semi-Special Plain Hydromatic, tracer control
28"x144" Cincinnati Plain Hydromatic, m.d., late
56-96 Cincinnati Plain Hydromatic, m.d. in base, 1944
56-72 Cincinnati Hydromatic Production, 1946

We carry an average stock of 2,000 machines in our 11 acre plant at Cincinnati. Visitors welcome at all times

THE EASTERN MACHINERY COMPANY

1002 Tennessee Avenue, Cincinnati 29, Ohio
MElrose 1241 "TWX" CI 174 CABLE ADDRESS—EMCO

50F—G & L Floor Type Boring Mill Ser. #8544-F

3—#5 J&L Turrets—Late

36" Hanchett Vert. Surface Grinder

10—32x24 Hanson Whitney Thread Miller—1953

14'x¾" Hilles & Jones Bending Rolls

3½" & 4" Landis Floor Type Boring Mills

Hazard Brownell Machine Tools, Inc.
350 Waterman St. Providence 6, R. I.
Dexter 1-8880

ELEC. AIR COMPRESSORS
3870 C.F.M.—Ing. Rand PRE 2—700 HP
2—3178 C.F.M.—Ing. Rand PRE 2—500 HP
445 C.F.M.—Chgo. Pneum PM 4—75 HP

DIESEL LOCOMOTIVES
3—GE. 25 ton 1—GE. 65 ton—100 ton GE.
1—Plymouth 30 ton 38 in. ga.
2—25 ton & 1— 80 ton GE. 42" ga.

STANHOPE 60 E. 42nd St., N. Y. 17, N. Y.

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ENGINEERED TO YOUR REQUIREMENTS

Ornitz Equipment Corp.
Industrial Engineering Service
220 3rd Ave. Brooklyn 17, N. Y.
TRiangle 5-2553

FOR SALE

1000 Ton HPM Vertical Hydraulic Press
Located Pittsburgh, Pa.
Bed Area—74¾" x 48" (L-R X F-B)
Daylight—36"
Stroke —36"
Closing Speed —265 in. /min.
Pressing Speed —14 in. /min.
Opening Speed—265 in. /min.
Motor —40 HP, 208/416V., 60 Cycle, 3 Phase

Press has HPM patented FASTRAVERSE operating system, with both manual and automatic press travel control.

Press in excellent condition with little usage and very suitable for plate work, large area forming, bending, straightening, etc.

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Telephone Oliver 4-5541

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1902-1958
World's Best Rebuilts

100 CFM	125 psi	6 x 7 Ing. or Worth.
138 CFM	100 psi	7 x 7 Ing. ES-1.
140 CFM	3500 psi	12¼ x 10 Norwalk-unused.
288 CFM	500 psi	10-4¼ x 10 Ing. or Worth.
420 CFM	40 psi	12x9 Ing. oil-less (new cylinder).
465 CFM	100 psi	12 x 11 Penn. or Ing.
502 CFM	125 psi	12 x 13 Worth. HB.
503 CFM	220 psi	13½-7 x 13 Ing. Or. or Elec.
585 CFM	100 psi	15-9¼ x 12 Ing. XRE 3-60-3100.
590 CFM	100 psi	13½-8 x 8 Penn DE2 3-60-220.
676 CFM	100 psi	15-9¼ x 12 Ing. XRB-Worth.
686 CFM	100 psi	14 x 13 Worth. HB.
790 CFM	100 psi	15½-9½x10 Ing. XRE 3-60-4000.
800 CFM	125 psi	14½-9 x 7 Ing. XLE 3-60-440.
870 CFM	125 psi	17-10½x12 Ing. XRE 3-60-220.
1007 CFM	100 psi	19-11 x 12 Chic. OCB.
1240 CFM	125 psi	19½-12x10 Ing. XVH 3-60-2300.
1410 CFM	35 psi	20 x 13 Worth. HB—unused.
1721 CFM	125 psi	23-13x10 Chic. OCE 3-60-2300.
2832 CFM	Vacuum	31x13 Ing. St. or Elec.

PORTABLES—55-900 CFM Rotary or Reciprocating.

AMERICAN AIR COMPRESSOR CORP.
DELL & 48TH STREET
NORTH BERGEN, N. J.
Telephone UNion 5-4848

Keep 'em rolling . . . not rusting

FOR SALE

New—Used—Reconditioned railroad freight cars • car parts • locomotives • tank cars • steel storage tanks

MARSHALL RAILWAY EQUIPMENT
Corporation
328 Connell Building, Scranton 3, Pennsylvania
Diamond 3-1117 Cable MARAILQUIP

MACHINES FOR YOUR YARD
B-E Hydrocrane H-3 w/hydraulic outriggers
Lorain Model 41 crane & dragline
24x48" magnetic pulley
Telsmith d.d. screens
Pioneer conveyors
Car pullers

TRACTOR & EQUIPMENT CO.
10006 Southwest Highway, Oak Lawn, Ill.

FOR SALE

50 ton American Diesel Locomotive Crane, new 1944. Caterpillar D-17000 engine. 15 KW Magnet Generator.

65 ton Whitcomb Diesel Elec. Loco. new 1943 Reconditioned. Cummins engines. Like new.

44 ton Whitcomb and Davenport Diesel Elec. Locos. 4 Traction Motors. Heavy Duty. Reconditioned.

50 ton American Guy Derrick. 115' Mast, 100' Boom. Amer. 3-d #140 Hoist & Swinger.

25 ton Davenport Gas-Elec. Loco. New 1946. Reconditioned.

WHISLER EQUIPMENT CO.
1910 Railway Exchange Bldg.
St. Louis 1, Mo.

FOR SALE

FREIGHT CAR REPAIR PARTS
RELAYING RAILS & ACCESSORIES
STEEL STORAGE TANKS
FRT. CARS & LOCOMOTIVES
CONTRACTOR EQUIP. & MACHINERY

THE PURDY CO.
8754 S. DOBSON AVE.
CHICAGO 19, ILL. — BA. 1-2100
ALSO ST. LOUIS, MO., SAN FRAN. AND LONG BEACH, CALIF.

FOR SALE

COMPLETE BAR & ROD ROLLING MILL IMMEDIATELY AVAILABLE

Suitable for Rolling Steel or Copper billets down to bar or rod sizes, including hotbed, shears, and rod coiler.

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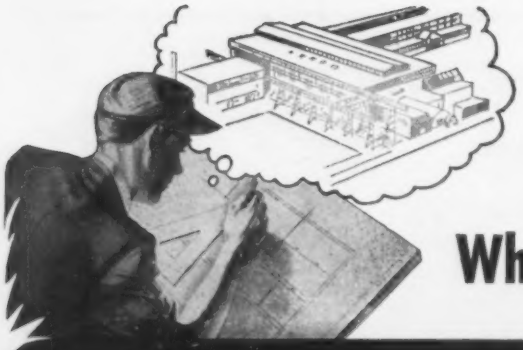
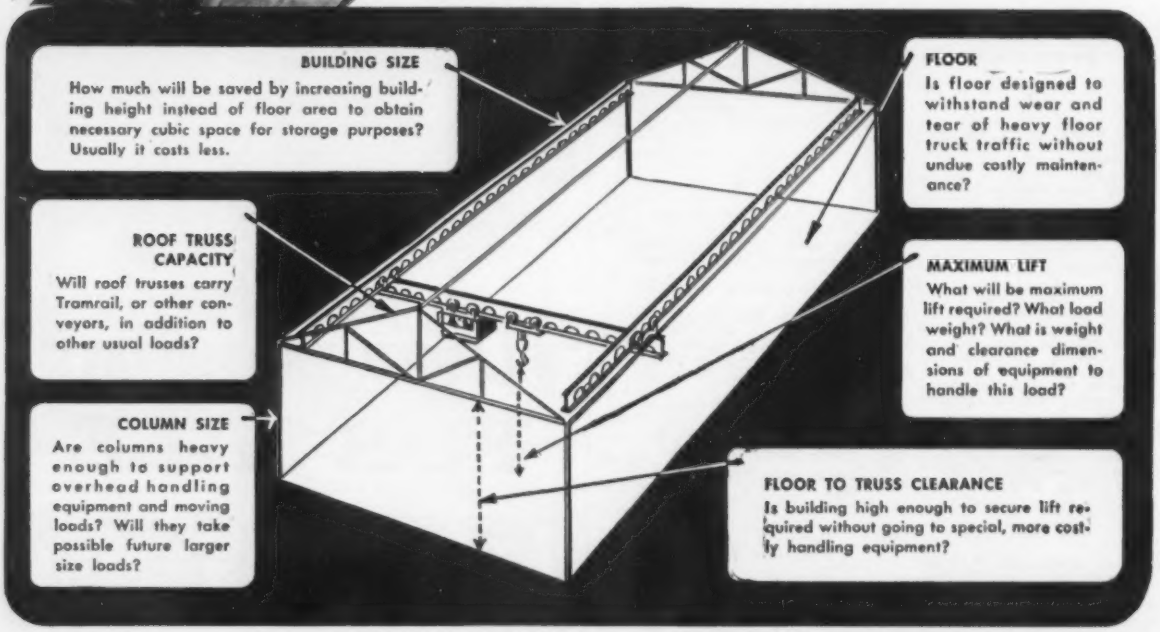


Don't Forget *Materials Handling* When Designing the Building



The foremost demand of a new factory building, whether for production or storage, is that its design and construction aid overall operating efficiency to the utmost. Thus, the building becomes more than just an enclosure, but is actually a vital part of the manufacturing process.

It is, therefore, imperative that the various steps entering into the making of an item be thoroughly considered when the building is designed. One of the most important of these concerns materials handing because this item often amounts from 25% to 50% of the total production cost, and, also, because it is plant-wise in nature.

Regardless of what handling methods are deemed best, overhead cranes or Tramrail, roller or chain conveyors, floor trucks, etc., the building design, size and construction usually has a tremendous bearing on the ultimate handling efficiency secured. Building clearances, floor construction, column locations, aisleway allowances and other factors must be considered for the different handling methods for most satisfactory results.

For initial economy in installation, for most satisfactory operation and highest efficiency, plan for materials handling when you design the building. ***Do not make materials handling an afterthought.***

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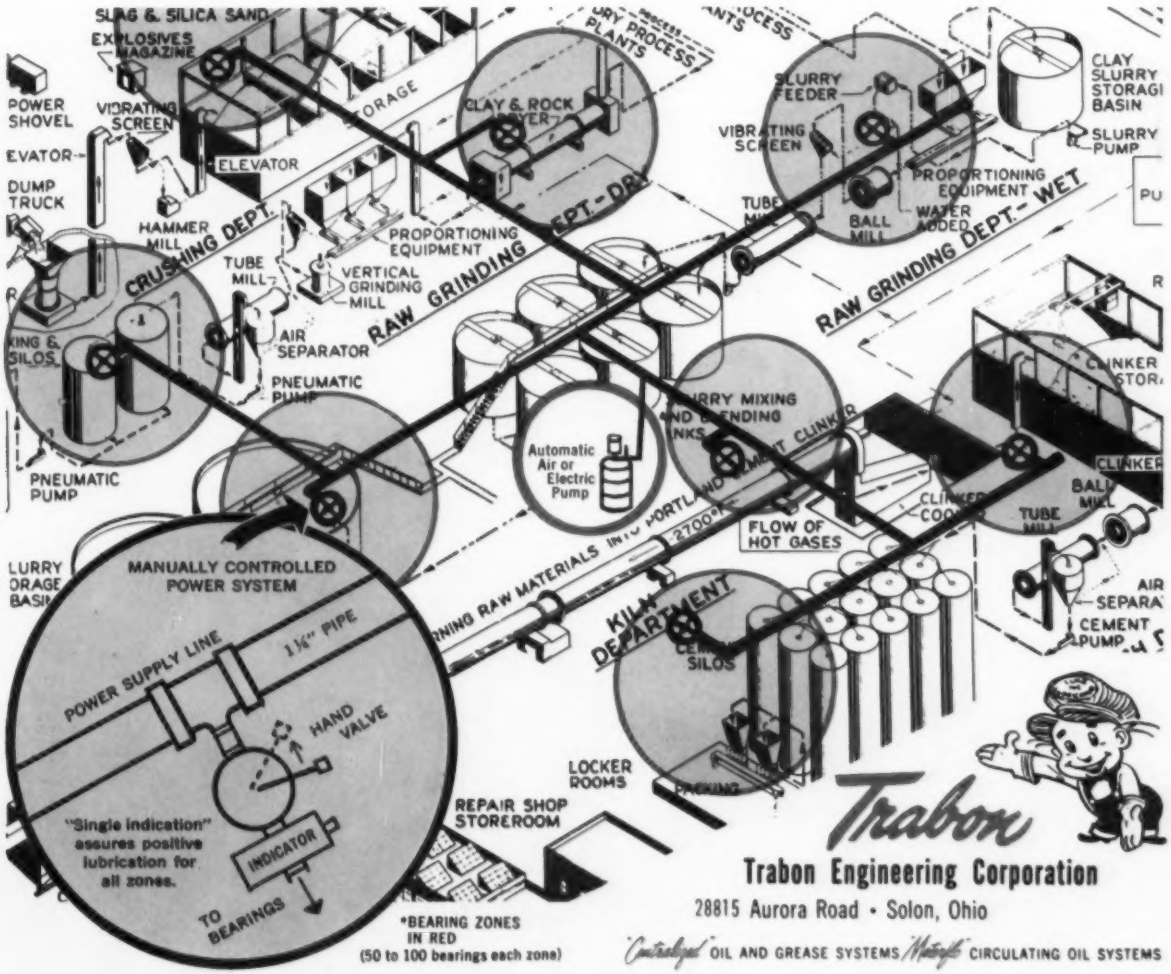
one automatic pump does all the work — manual valves and single indication at each zone* eliminates pumping by hand — you gain versatility — save thousands of dollars in lubrication time, increased bearing life and reduced downtime.

Write today for Bulletin 584 describing Trabon's new MANU-MATIC Centralized Lubricating System. Fully Automatic Systems also available.



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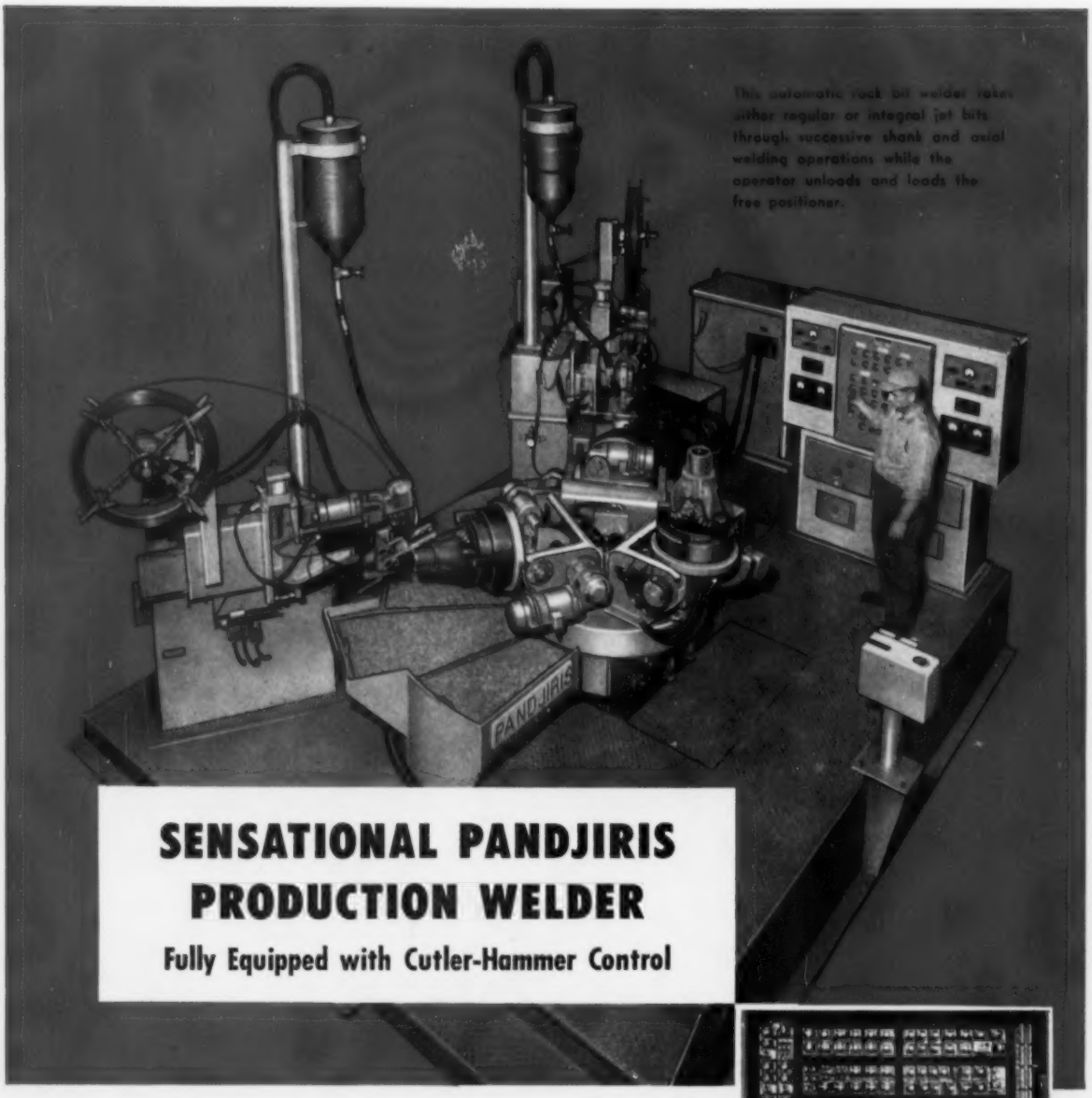
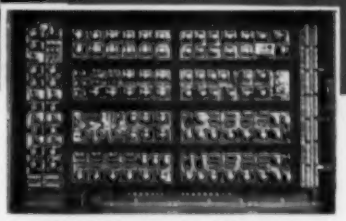


SENSATIONAL PANDJIRIS PRODUCTION WELDER

Fully Equipped with Cutler-Hammer Control



The electrical control cubicle contains all the Cutler-Hammer Three-Star Control components which control each machine motion.

Typical of the broad trend to automation and the advanced engineering which makes it possible is the new Pandjiris AUTO-WELD-MATON* transfer type production welder for the manufacture of rock bits. Typical of automation projects, its very heart is a complex system of electrical control equipment. And typical of the best in engineering, this control equipment is 100% Cutler-Hammer.

The Pandjiris Weldment Co., St. Louis, Missouri, has long been a leader in the design and manufacture of production welding equipment, positioners, turning rolls, weld-evators, head manipulators, etc., as well as the spectacular Pandjiris AUTO-WELD-MATONS custom engineered to specific mass production requirements. Dependable performance built the Pandjiris reputation and Cutler-Hammer is proud that Cutler-Hammer Three-Star Motor Control and Cutler-Hammer Heavy Duty Oil Tight Pushbuttons are furnished as standard original equipment on all Pandjiris machines. CUTLER-HAMMER Inc., 1325 St. Paul Avenue, Milwaukee 1, Wisconsin. *Associate:* Canadian Cutler-Hammer, Ltd., Toronto.

*AUTO-WELD-MATON is a Pandjiris Weldment Co. Trademark

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